SureMark Printers

Hardware Service Manual

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GY27-0355-03

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Note

Before using this information and the product it supports, be sure to read “Safety Information” on page viii, “Appendix D. Translated Safety Notices” on page 201, and the general information under “Appendix E. Notices” on page 209.

Fourth Edition (September 2000)

This edition applies to the IBM SureMark Printers, models TI1, TI2, TI3, TI4, TF6, and TM6.

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Preface

This manual provides problem determination and testing information and a parts listing of field-replaceable units (FRUs) for the IBM SureMark Printers.

Who Should Read This Manual

This manual is intended for use by trained service representatives.

How This Manual Is Organized

Part 1 contains information for all SureMark printers:

- Chapter 1. Overview – an overview of the features of the SureMark printers.
- Chapter 2. SureMark Installation, Service, and Utility Software – information about using the utilities diskettes.

Part 2 contains the following information that is specific to the thermal/impact SureMark printers – models TI1, TI2, TI3, and TI4:

- Chapter 3. Problem Determination – information about testing, messages, and symptoms for determining any failing components of the SureMark printer. This chapter also includes procedures for removing and replacing components in the SureMark printer.
- Chapter 4. Hardware Adjustment Procedures – printer adjustment procedures.
- Chapter 5. Parts Listing – part numbers of the field replaceable units (FRUs) for the SureMark printer.
- Chapter 6. Operation – information on operating the SureMark printer.

Part 3 contains the following information that is specific to the single-station SureMark printers – models TF6 and TM6:

- Chapter 7. Problem Determination – information on testing, messages, and symptoms for determining any failing components of the SureMark printer. This chapter also includes procedures for removing and replacing components in the SureMark printer.
- Chapter 8. Hardware Adjustment Procedures – printer adjustment procedures.
- Chapter 9. Parts Listing – part numbers of the field replaceable units (FRUs) for the SureMark printer.
- Chapter 10. Operation – information on operating the SureMark printer.

The appendixes contain the following information:

- Appendix A. Maintenance Inspection –checklist to be used during an IBM maintenance inspection.
- Appendix B. Preventive Maintenance Information – preventive maintenance procedures for the SureMark printer.
- Appendix C. Tools and Supplies – information about special tools for the SureMark printer and the pin assignments you need to know if you use non-IBM cables.
- Appendix D. Translated Safety Notices – translations of the safety notices in this manual.
- Appendix E. Notices – electronic emission notices and other general information.

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Related Publications and Diskettes

- *IBM SureMark Printers: User's Guide*, GA27-4151
- *IBM SureMark Printers: firmware update diskettes*
- *IBM SureMark Printers: Fonts and Logos Utility Diskette*
- *IBM Safety Information – Read This First*, GA27-4004
- *IBM SurePOS 700 Series: Hardware Service Guide*, GA27-0363
- *IBM SurePOS 700 Series: Options and I/0 Devices Service Guide*, SY27-0392
- *IBM SurePOS 700 Series: System Reference*, SA27-4224
- *IBM SurePOS 500 Series: System Reference*, SA27-4255
- *POSS Programming Reference and User's Guide*, SC30-3560

The diskettes are only available by download from the Internet. See "Resources on the Internet" on page 22 for more information.

For information about ordering IBM publications not shipped with the SureMark, contact your IBM representative or your place of purchase.

SureMark publications are available on the Internet as PDF files. See "Resources on the Internet" on page 22 for more information.

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Between major revisions of this manual we may make minor technical updates. The latest softcopy version of this manual is available under Publications on the IBM Retail Store Solutions Web site.

Safety Information

Danger:
Before you begin to install this product, read the safety information in *IBM Safety Information — Read This First*, GA27–4004. This booklet describes safe procedures for cabling and plugging in electrical equipment.

Gevaar:
Voordat u begint met de installatie van dit produkt, moet u eerst de veiligheidsinstructies lezen in de brochure *Veiligheidsinstructies—Lees dit eerst*, GA27–4004. Hierin wordt beschreven hoe u electrische apparatuur op een veilige manier moet bekabelen en aansluiten.

Perigo:
Antes de começar a instalar este produto, leia as informações de segurança contidas em *Informações Sobre Seguranaça—Leia Isto Primeiro,* GA27–4004. Esse folheto descreve procedimentos de segurança para a instalação de cabos e conexões em equipamentos elétricos.

Fare!
Før du installerer dette produkt, skal du læse sikkerhedsforskrifterne i *Sikkerhedsforskrifter—Læs dette først* GA27–4004. Vejledningen beskriver den fremgangsmåde, du skal bruge ved tilslutning af kabler og udstyr.

Gevaar
Voordat u begint met het installeren van dit produkt, dient u eerst de veiligheidsrichtlijnen te lezen die zijn vermeld in de publikatie *IBM Safety Information — Read This First*, GA27–4004. In dit boekje vindt u veilige procedures voor het aansluiten van elektrische appratuur.

VAARA

Ennen kuin aloitat tämän tuotteen asennuksen, lue julkaisussa *Turvaohjeet—Luetämä ensin*, GA27–4004, olevat turvaohjeet. Tässä kirjasessa on ohjeet siitä, miten sähkölaitteet kaapeloidaan ja kytketään turvallisesti.

Danger

Avant d'installer le présent produit, consultez le livret *Informations pour la sécurité–Lisez-moi d'abord*, GA27–4004, qui décrit les procédures à respecter pour effectuer les opérations de câblage et brancher les équipements électriques en toute sécurité.

Vorsicht

Bevor mit der Installation des Produktes begonnen wird, die Sicherheitshinweise in *Sicherheitsinformationen—Bitte zuerst lesen,* IBM Form GA27–4004. Diese Veröffentlichung beschreibt die Sicherheitsvorkehrungen für das Verkabeln und Anschlie*ß*en elektrischer Geräte.

Vigyázat

Mielôtt megkezdi a berendezés üzembe helyezését, olvassa el a *IBM Safety Information — Read This First*, GA27–4004 könyvecskében leírt biztonsági információkat. Ez a könyv leírja, milyen biztonsági intézkedéseket kell megtenni az elektromos berendezés huzalozásakor illetve csatlakoztatásakor.

Pericolo

prima di iniziare l'installazione di questo prodotto, leggere le informazioni relative alla sicurezza riportate nell'opuscolo *Informazioni di sicurezza—Prime informazioni da leggere* in cui sono descritte le procedure per il cablaggio ed il collegamento di apparecchiature elettriche.

Fare

Før du begynner å installere dette produktet, må du lese sikkerhetsinformasjonen i *Sikkerhetsinformasjon—Les dette først,* GA27–4004 som beskriver sikkerhetsrutinene for kabling og tilkobling av elektrisk utstyr.

Perigo

Antes de iniciar a instalação deste produto, leia as informações de segurança *Informações de Segurança—Leia Primeiro,* GA27–4004. Este documento descreve como efectuar, de um modo seguro, as ligações eléctricas dos equipamentos.

Peligro

Antes de empezar a instalar este producto, lea la información de seguridad en *Información de Seguridad—Lea Esto Primero,* GA27–4004. Este documento describe los procedimientos de sequridad para cablear y enchufar equipos eléctricos.

Varning—livsfara

Innan du börjar installera den här produkten bör du läsa säkerhetsinformationen i dikumentet *Säkerhetsföreskrifter—Läs detta först,* GA27–4004. Där beskrivs hur du på ett säkert sätt ansluter elektrisk utrustning.

危險：安裝本產品之前， 請先閱讀
"IBM Safety Information--Read
This First" GA27-4004 手冊中所提
供的安全注意事項。 這本手冊將會說明
使用電器設備的纜線及電源的安全程序。

Opasnost: Prije nego sto počnete sa instalacijom produkta,
pročitajte naputak o pravilima o sigurnom rukovanju u
Upozorenje: Pravila o sigurnom rukovanju - Prvo pročitaj ovo,
GA27-4004. Ovaj privitak opisuje sigurnosne postupke za
priključrivanje kabela i priključivanje na električno napajanje.

Upozornění: než zahájíte instalaci tohoto produktu, přečtěte si
nejprve bezpečnostní informace v pokynech „ Bezpečnostní
informace“ č. GA27-4004. Tato brožurka popisuje bezpečnostní
opatření pro kabeláž a zapojení elektrického zařízení.

Κίνδυνος: Πριν ξεκινήσετε την εγκατάσταση αυτού του προϊόντος,
διαβάστε τις πληροφορίες ασφάλειας στο φυλλάδιο *IBM Safety
Information-Read this first,* GA27-4004. Στο φυλλάδιο αυτό
περιγράφονται οι ασφαλείς διαδικασίες για την καλωδίωση των
ηλεκτρικών συσκευών και τη σύνδεσή τους στην πρίζα.

危険： 導入作業を開始する前に、安全に関する
小冊子 GA27-4004 の「最初にお読みください」
(Read This First)の項をお読みください。
この小冊子は、電気機器の安全な配線と接続の
手順について説明しています。

위험: 이 제품을 설치하기 전에 반드시
"주의: 안전 정보-시작하기 전에"
(GA27-4004) 에 있는 안전 정보를
읽으십시오.

סכנה: לפני שמתחילים בהתקנת מוצר זה, יש לקרוא את הוראות הבטיחות בחוברת
Caution: Safety Information - Read This First, GA27-4004
חוברת זו מתארת את הוראות הבטיחות לחיבור הכבלים ולחיבור לחשמל של ציוד חשמלי.

خطـــر: قبـــل عمـــلية بـــدء تركيـــب هذا المنتـــج، قم بقراءة معلومـــات
الحمـــاية الموجودة في التحذيـــر: معلومـــات الحمـــاية – Read This First،
GA27-4004 . يقـــوم هذا الكتيـــب بوصـــف اجـــراءات الأمـــان
لتوصـــيل الأدوات الكـــهربائية بالكـــابلات والمقبـــس الكـــهربائـــي.

ОПАСНОСТ
Пред да почнете да го инсталирате овој продукт, прочитајте ја информацијата за безбедност:
"Предупредување: Информација за безбедност: Прочитајте го прво ова", GA27-4004.
Оваа брошура опишува безбедносни процедури за каблирање и вклучување на електрична опрема.

Uwaga:
Przed rozpoczęciem instalacji produktu należy zapoznać się z instrukcją:
"IBM Safety Information - Read This First", GA27-4004.
Zawiera ona warunki bezpieczeństwa przy podłączaniu do sieci elektrycznej i eksploatacji.

ОСТОРОЖНО: Прежде чем инсталлировать этот продукт, прочтите Инструкцию по технике безопасности в документе "Внимание: Инструкция по технике безопасности -- Прочесть в первую очередь", GA27-4004. В этой брошюре описаны безопасные способы каблирования и подключения электрического оборудования.

Nebezpečenstvo: Pred inštaláciou výrobku si prečítajte bezpečnosté predpisy v
Výstraha: Bezpeč osté predpisy - Prečítaj ako prvé, GA27-4004. V tejto brožúrke sú opísané bezpečnosté postupy pre pripojenie elektrických zariadení.

Pozor: Preden zaènete z instalacijo tega produkta preberite poglavje: 'Opozorilo: Informacije o varnem rokovanju-preberi pred uporabo," GA27-4004. To poglavje opisuje pravilne postopke za kabliranje,

危險：

開始安裝此產品之前，請先閱讀安全資訊。

注意：

請先閱讀 - 安全資訊 GA27-4004

此冊子說明插接電器設備之電纜線的安全程序。

Wartungsprüfung

Anmerkung: Siehe *Handbuch Sicherheit im Technischen Außendienst*,IBM Form Z0050-090.

Eine IBM Wartungsprüfung ist als Teil jeglicher Überprüfung von Änderungen und Erweiterungen aller IBM Produkte durchzuführen, die zur Zeit Gegenstand eines IBM Miet- oder Wartungsvertrags oder im IBM Telefonservice sind. Wenn die Prüfung ergibt, daß die Sicherheitsstufe des IBM Produkts nicht akzeptabel ist, so muß es auf eine akzeptable Sicherheitsstufe gebracht werden.

Wartungsprüfliste

Anmerkung: Alle Geräte und angeschlossenen Einrichtungen von Fremdfirmen vor dem Führen der Wartungsprüfliste von der Einheit 4694 entfernen. Siehe *Hardware Service Manual for Point-of-sale Input/Output Devices*.

1. Bereitmodus ausschalten (Ready OFF).
2. Netzstecker aus der Steckdose ziehen.
3. Netzkabel wie folgt prüfen:
   a. Widerstand zwischen Schutzleiterstift und Netzteilgehäuse messen. Der Widerstand muß weniger als 0,1 Ohm betragen. Kontakt zum Netzteilgehäuse befindet sich hinten neben der Sicherung.
   b. Das Netzkabel darf nicht durchgescheuert oder beschädigt sein.
4. Alle Änderungen feststellen, die nicht durch IBM vorgenommen wurden. Falls Änderungen durchgeführt wurden, ist der *"R009 non-IBM Alterations/Attachments Survey"* abgeschlossen?
5. Prüfen, ob Leitungen mit schadhafter oder fehlender Isolierung vorhanden sind.
6. Prüfen, ob Stecker oder elektrische Anschlüsse freiliegen.
7. Prüfen, ob die folgenden Sicherheitsetiketten vorhanden und lesbar sind:
   a. Auf dem Sicherheitsetikett auf der Außenseite des Bildschirms (falls vorhanden) sollte stehen: “Gefährliche Spannung. Verkleidung keinesfalls öffnen. Keine zu wartenden Teile enthalten.”
   b. Die Etiketten der aufladbaren Batterien sollten Anweisungen zum Recycling enthalten.
8. Systemgrundeinheit innen auf Gefahrenquellen wie lose Schrauben, verschmutzende Chemikalien, Wasser oder Feuchtigkeit, Brand- oder Rauchschäden, Metallteilchen, Staub etc. überprüfen.
9. Die auf dem Etikett angegebene Spannung muß mit der Netzspannung übereinstimmen.
10. Die Befestigungen für die Oberseite des Netzteils müssen ordnungsgemäß angebracht sein und dürfen nicht verändert werden.
11. Bei Modellen mit Batterien den Batteriezustand prüfen.
12. Darauf achten, daß der Bereitmodus ausgeschaltet ist (Ready OFF), und Frontverkleidung wieder einbauen.
13. Das Netzkabel wieder in die Steckdose stecken und prüfen, ob sich das Gerät einwandfrei ein- und ausschalten läßt.

附錄 A. 維修檢查

註：請參閱 Electrical Safety for IBM Customer Engineers，S229-8124。

根據租約、維修合約或 IBM 叫修服務，IBM 維修檢查為目前對任何 IBM 產品的任何變更及配件檢查的一部分。如果 IBM 產品的安全等級無法為此一檢查所接受，則必須提高其安全等級至可接受之等級。

維修之核對清單

註：進行維修前，請先將非 IBM 裝置及配件自 4694 裝置移除。請參閱 Hardware Service Manual for Point-of-Sale Input/Output Devices。

1. 將 Ready mode 切換為 OFF。
2. 將交流電電源線自牆上插座拔掉。
3. 對交流電電源線進行下列檢查：
   a. 使用電表測量外部接地線與電源供應器框架間的第三接地線電阻是否為 0.1 歐姆或更低。請由後面靠近保險絲處，接近電源供應器框架。
   b. 交流電電源線不得有磨損情形。
4. 檢查是否有非 IBM 原廠零件。如果有，是否做過 R009 non-IBM Alterations/Attachments 調查？
5. 檢查電線是否受損或絕緣失效。
6. 檢查暴露在外的電氣接點或端子。
7. 檢查是否有下列安全標籤：
   a. 顯示器外表上的安全標籤 (如果有的話)，應標示為：
   "高壓危險。請勿移除此一蓋子。內部沒有需要維修的零件。"
   b. 充電式電池標籤上應含有資源回收指示。
8. 檢查系統基本單元內部是否有明顯的安全顧慮，例如金屬屑、污物、水或其他流體，或煙燻痕跡。
9. 確認電壓標籤所標示的電壓與交流電電源線上的電壓相符。
10. 確認固定電源供應器上方蓋子的固定器未遺失且未變更。
11. 如該型號附有電池，檢查該電池狀況。
12. 確認 Ready mode 為 OFF，並重新裝上前方面板。
13. 將交流電電源線接至電源插座，並確認機器上的 Ready mode 為 ON。

updated October 30, 2001

Summary of Changes

This section summarizes the changes included in the latest editions of this manual.

Web-only update for GY27-0355-03 (October 2001)

This update corrects the parts catalog information for the covers on models TM6 and TF6. Refer to “Assembly 14: Covers” on page 178 for revision bars that indicate the changed information.

Web-only update for GY27-0355-03 (June 2001)

This update adds information about the new TG3 and TG4 models. Refer to “Chapter 5. Parts Listing” on page 119 for revision bars that show which parts that have been added.

GY27-0355-03

This edition includes information about the new single-station SureMark printers, which are models TF6 and TM6, and also includes updates for models TI3 and TI4. Changed or new information is indicated by a revision bar (|) in the left margin. (There are no revision bars in the margin of figures. Refer to “Figures” on page xix for revision bars that show which figures have been changed.)

There are both similarities and important differences between the thermal/impact SureMark printers (models TI1, TI2, TI3 and TI4) and the single-station SureMark printers (models TF6 and TM6). For that reason, this document has been reorganized and divided into parts.

- “Part 1. General Information” on page 1 contains information that is similar for all SureMark models. Information about the new single-station printers has been added throughout this part.
- “Part 2. Models TI1, TI2, TI3, TI4, TG3 and TG4” on page 23 contains information about the thermal/impact printers. This information has a few changes from the previous edition.
- “Part 3. Models TF6 and TM6” on page 159 contains information about the single-station printers. All information in this part is new in this edition.

GY27-0355-02

This edition includes information about USB support for the SureMark printer.

GY27-0355-01

This edition includes information about two new models of the SureMark printer – Model TI3 and Model TI4. Because Model TI3 is a new version of Model TI1, and Model TI4 is a new version of Model TI2, in some cases only the new model number was added to the existing text.

Information sections that were added include:

- “Removing and Replacing the Home Sensor” on page 44
- “Removing and Replacing the Main Logic Card and Connector-Attached Interface Card (Models TI3, TI4, TG3, and TG4)” on page 79

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- "Removing and Replacing the Rotating Cutter Blade and Thermal Guide" on page 93
- "Firmware Update" on page 15
- "Emulating the IBM Model 3 or Model 4 Printers" on page 18
- "MICR Data Parser Sample Code (Models TI2, TI4 and TG4 Only)" on page 22
- "RS-232 Connector Pin Assignments" on page 199
- "Cash Drawer Connector Pin Assignments" on page 200

Because documentation, drivers, and diskettes are now available on the Web, "Resources on the Internet" on page 22 was added to describe how to locate the applicable Web site.

Information that was changed includes:

- "Symptoms" on page 30, the table that describes the actions to take for various printer problems.
- "Customer Receipt Paper Movement and Cutter Problems" on page 35.
- "Removing and Replacing the Transport Motor" on page 52 and "Removing and Replacing the Printhead Cable" on page 55, which were previously one combined procedure.
- Many of the remove/replace procedures. The procedures that have been greatly revised include:
  - "Removing and Replacing the Top, Paper, and Ribbon Covers" on page 37
  - "Removing and Replacing the Printhead" on page 43
  - "Removing and Replacing the Ribbon Drive Assembly" on page 45
  - "Removing and Replacing the Document Insert Platen Assembly" on page 59
  - "Removing and Replacing the MICR Read Head" on page 61
  - "Removing and Replacing the Thermal Platen Assembly" on page 91
  - "Removing and Replacing the Customer Receipt Motor" on page 92
  - "Removing and Replacing the Cutter Gears and Cutter Clutch" on page 94
- "Thermal Paper Switch Adjustment" on page 116
- "Chapter 5. Parts Listing" on page 119

Many of the figures have been revised to make it easier to locate the parts of the printer that are referenced in the related text.

Some information has been moved:

- "Document Sensor Threshold Reset" on page 117 was in Chapter 1 in the previous edition.
- "Using the 4690 Operating System" on page 11 and "Using the Reference/Service Diskettes (RS-485 or RS-232 Printers)" on page 12 were in Chapter 2 in the previous edition.

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Part 1. General Information

This section contains information that applies to all SureMark printers.

The following table shows the warranty information for each printer model.

Table 1. Warranty Information

Machine type	Description	Warranty service	Warranty upgrade
4610-TI3	Attaches to the IBM 4694/4800. RS232, RS485, USB (Pearl white covers)	IOR 24x7	none
4610-TI4	Attaches to the IBM 4694/4800. RS232, RS485, USB (Pearl white covers)	IOR 24x7	none
4610-TI5 (DBCS – AP only)	Attaches to the IBM 4694/4800. RS232, RS485, USB (Pearl white covers)	IOR 24x7	none
4610-TM6	Attaches to the IBM 4694/4800. RS232, RS485, USB (Pearl white covers)	IOR 24x7	none
4610-TM7 (DBCS – AP only)	Attaches to the IBM 4694/4800. RS232, RS485, USB (Pearl white covers)	IOR 24x7	none
4610-TF6	TM6 with iron gray covers to match 4840	Depot repair	IOR 24x7 IOR 9x5
4610-TF7	TM7 with iron gray covers to match 4840	Depot repair	IOR 24x7, IOR 9x5
4610-IF6	Functionally equivalent to TF6 with iron gray covers but with IOR warranty	IOR 24x7	none
4610-TG3	Functionally equivalent to Model TI3 with iron gray covers to match the IBM 4840	IOR 24x7	none
4610-TG4	Functionally equivalent to Model TI4 with iron gray covers to match the IBM 4840	IOR 24x7	none
4610-TG5 (DBCS – AP only)	Functionally equivalent to Model TI5 with iron gray covers to match the IBM 4840	IOR 24x7	none
4610-DG3	Functionally equivalent to Model TG3 but with Depot warranty	Depot repair	IOR 24x7, 9x5
4610-DG4	Functionally equivalent to Model TG4 but with Depot warranty	Depot repair	IOR 24x7, 9x5
4610-DI3	Functionally equivalent to Model TI3 but with Depot warranty	Depot repair	IOR 24x7, 9x5
4610-DI4	Functionally equivalent to Model TI4 but with Depot warranty	Depot repair	IOR 24x7, 9x5
4610-DM6	Functionally equivalent to Model TM6 but with Depot warranty	Depot repair	IOR 24x7, 9x5

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Note: IOR 24x7 is IBM onsite repair 24 hours times seven days per week. 9x5 is nine hours per day for five days per week.

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Indicators, Controls, and Stations – Thermal/Impact Printers

There are two triangular-shaped buttons and two LED indicators located on the top of the printer. The buttons serve multiple functions.

When the Printer Ready LED indicator is on continuously, the printer is online (connected to the system) and ready for printing.

When the indicator blinks, one of the following conditions exists:
- The printer is offline (offline testing is enabled).
- The printer is out of thermal paper.
- The ribbon cover and/or CR paper cover is open.
- The printer has a nonrecoverable home error.

The second LED is the document present indicator. It lights when a document is inserted far enough into the Document Insert (DI) station to reach the DI sensor. When this LED blinks, the DI station is waiting for you to insert a document.

The topmost button is the Customer Receipt (CR) paper feed button. Press this button to advance the CR paper. The lower button is the document feed button. Press this button to advance the document.

If you simultaneously press both buttons momentarily and then release them, the DI throat opens. The throat must be open to insert a document from the side. Press and then release both buttons again to close the throat.

Both buttons are also used to test the printer. See “Offline Tests” on page 25 for additional button functions.

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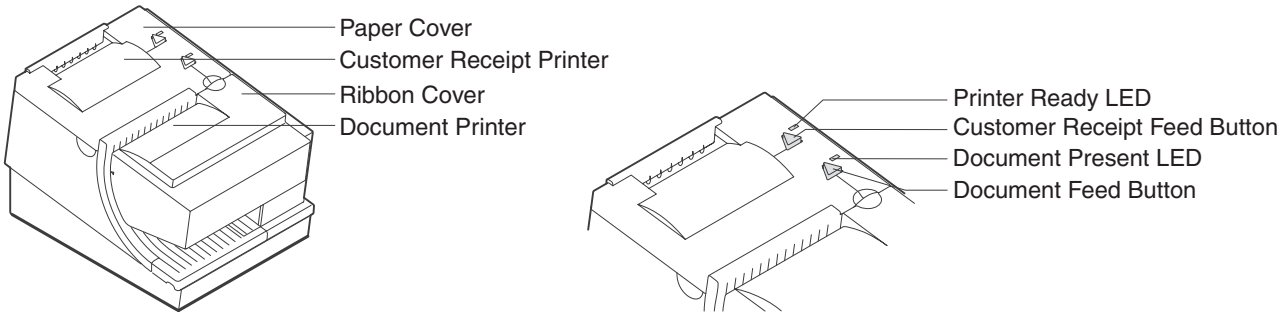


Figure 1. Indicators, Controls, and Printing Stations – Thermal/Impact SureMark Printers

Indicator, Control, and Station – Single-Station Printers

There is one triangular-shaped button and one LED indicator located on top of the printer.

When the indicator is on continuously, the printer is powered on and ready for printing. When the indicator blinks, one of the following conditions exists:

- The printer is offline (offline testing is enabled).
- The printer is out of paper.
- The cover is open.
- The cutter has jammed.

The button is the Customer Receipt (CR) paper feed button. Press this button to advance the CR paper.

See “Offline Diagnostics” on page 161 for additional button functions.

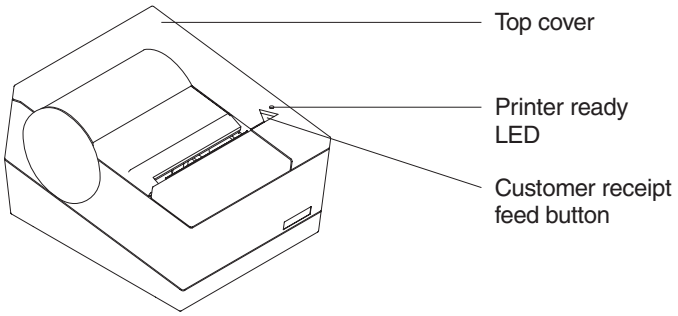


Figure 2. Indicator, Control, and Printing Station – Single-Station SureMark Printers

Communication Mode Selections

RS-232 Baud Rate Selection

The SureMark printer supports two RS-232 baud rates, 9600 and 19 200 baud.

The baud rate is selected using SW1-1 on the main logic card. The switch is located on the lower left corner of the logic card and is accessible without removing the printer covers. Set the switch as follows:

SW1-1 OFF - 9600 baud
SW1-1 ON - 19 200 baud

The card is normally set with SW1-1 in the OFF position, which selects the 9600 baud rate. See Figure 3 for thermal/impact SureMark printers. See Figure 4 and Figure 5 on page 6for single-station SureMark printers.

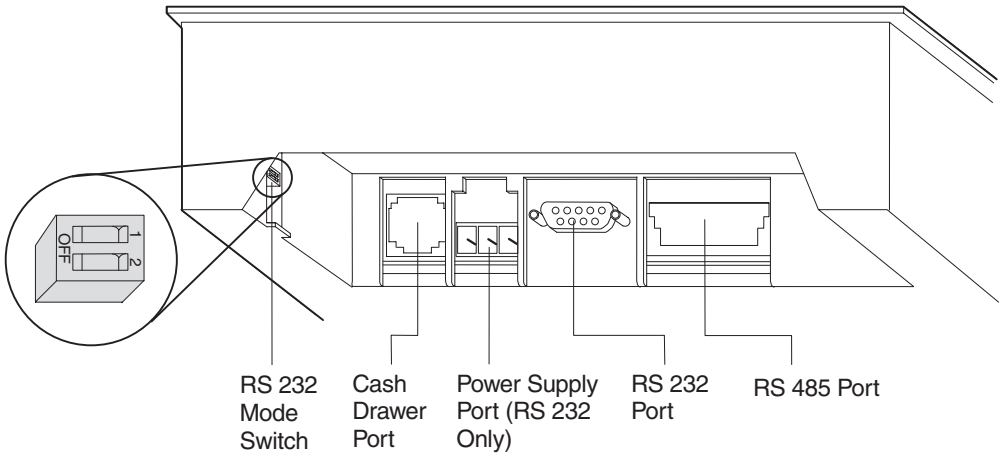


Figure 3. Cable Connectors and RS-232 Mode Switch for Thermal/Impact SureMark Printers. (View is from the bottom rear of the printer)

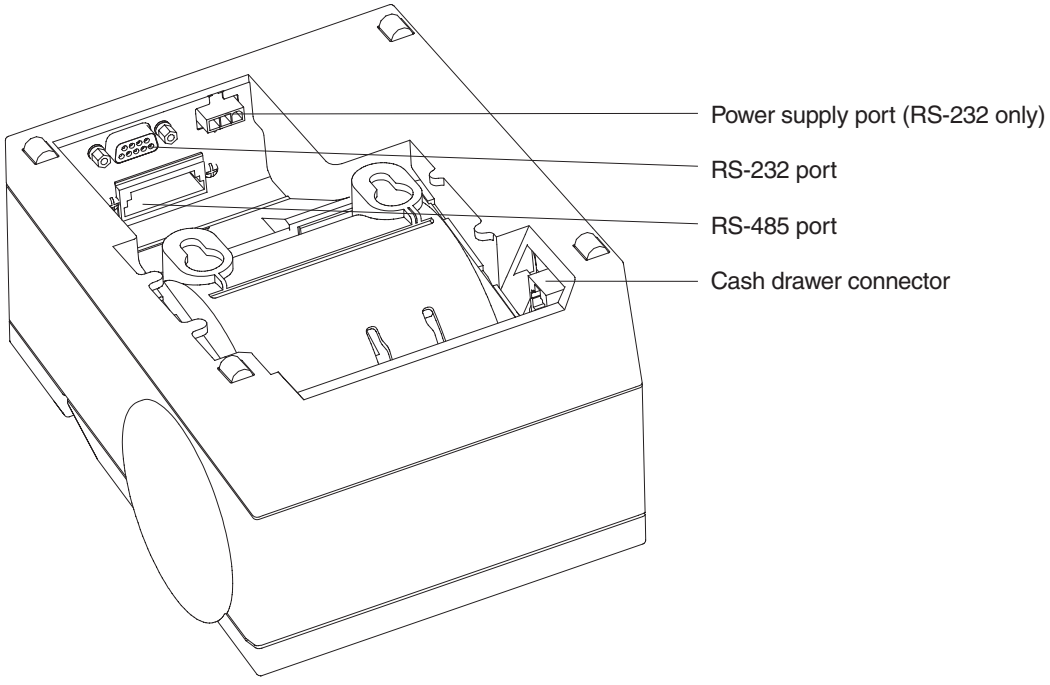


Figure 4. Cable Connectors for Single-Station SureMark Printers. (View is from the bottom rear of the printer)

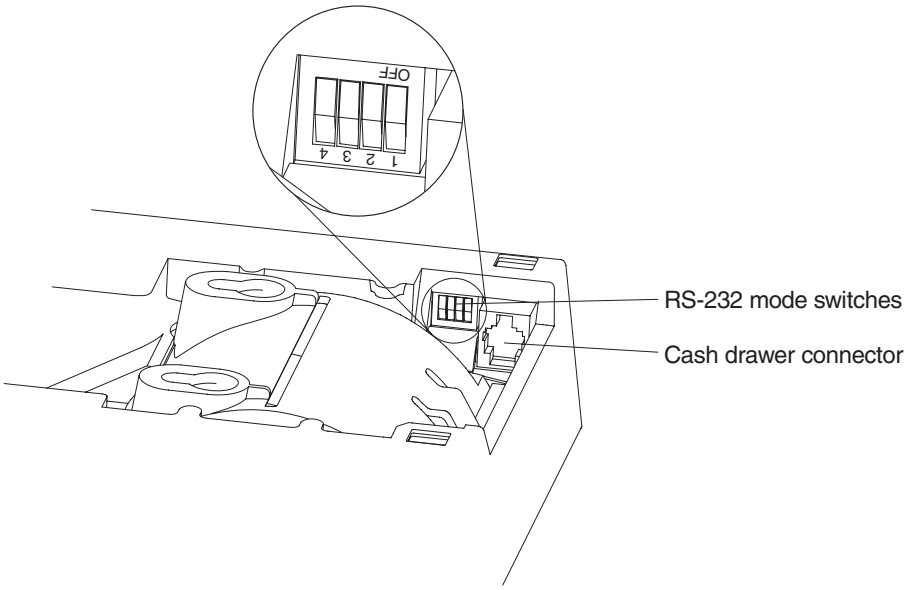


Figure 5. RS-232 Mode Switch for Single-Station SureMark Printers. (View is from the bottom rear of the printer)

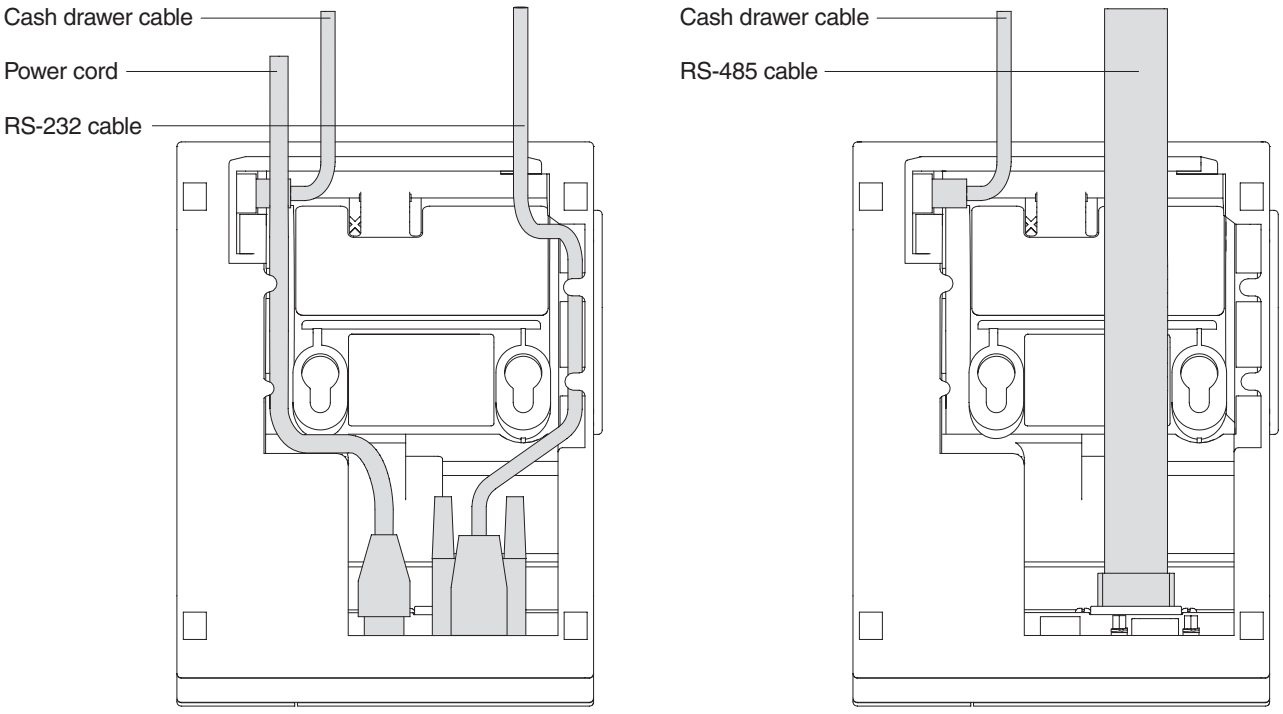


Figure 6. RS-232 and RS-485 Cable Routing for Single-Station SureMark Printers

RS-232 XON/XOFF Mode Selection

The SureMark printer supports RS-232 protocol using DTR/DSR lines to control data transmission. It also supports XON/XOFF modes where system and printer software control the flow of data. Select these modes using SW1-2 on the main logic card. The switch is located on the lower left corner of the logic card and is accessible without removing the printer covers. Set the switch as follows:

SW1-2 OFF - DTR/DSR Control
SW1-2 ON - XON/XOFF Control (Required when using a 3-wire RS-232 cable)

The card is normally set with SW1-2 in the OFF position, which selects DTR/DSR mode of operation. See Figure 3 on page 5.

RS-232/RS-485 Selection

The SureMark printer will operate using either RS-232 or RS-485 communications protocol. RS-232 is typically associated with PC systems. The printer contains a 9-pin D-shell connector for RS-232 communications. This connector is located on the interface card and is accessible under the printer without the need to remove the printer covers. The connector has the following pin functions:

Pin	Signal	Pin	Signal
1	Not Connected	6	DSR
2	Transmit	7	Not Connected
3	Receive	8	Not Connected
4	DTR	9	Not Connected
5	Signal Ground		

RS-485 mode is an IBM proprietary mode of communication. This form of communication is obtained when attaching the appropriate cable to **Port 7** on an IBM POS system.

Emulation Mode Selection

Single-station SureMark printers can emulate an Epson single-station printer.

The printer's mode is selected using SW1-3 on the main logic card (see Figure 4 on page 5). The switch is located on the logic card next to the cash drawer connector and is accessible without removing the printer covers. Set the switch as follows:

SW1-3 OFF - SureMark native mode
SW1-3 ON - Epson emulation mode

For more information about emulation mode, see "Emulating an Epson Single-Station Printer (Single-Station Only)" on page 21.

USB Selection

Universal serial bus (USB) is an industry standard communication interface. It is used to attach devices, such as printers, displays, and keyboards, to personal computers or IBM POS systems that have USB ports. The standard USB port (with a power brick) is used to attach the SureMark to personal computers. The powered USB port is used to attach the SureMark to IBM POS systems. See Figure 7 on page 8 for the thermal/impact SureMark printers and Figure 8 on page 8 for the single-station SureMark printers.

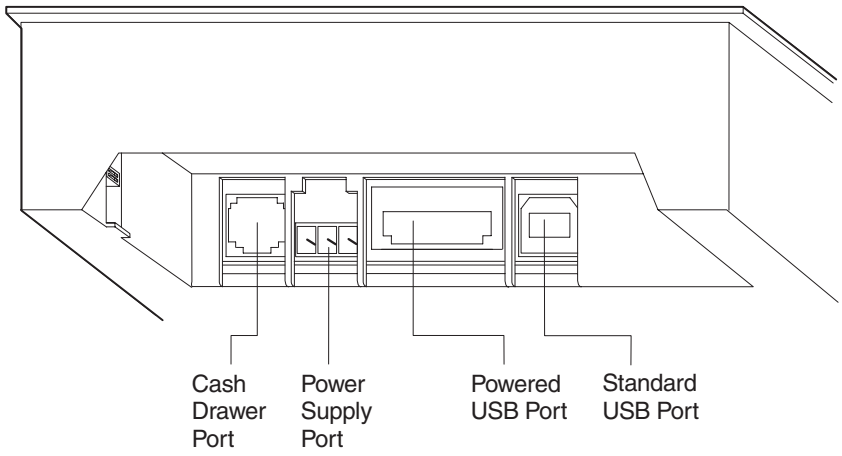


Figure 7. USB Ports for Thermal/Impact SureMark Printers. (View is from the bottom rear of the printer)

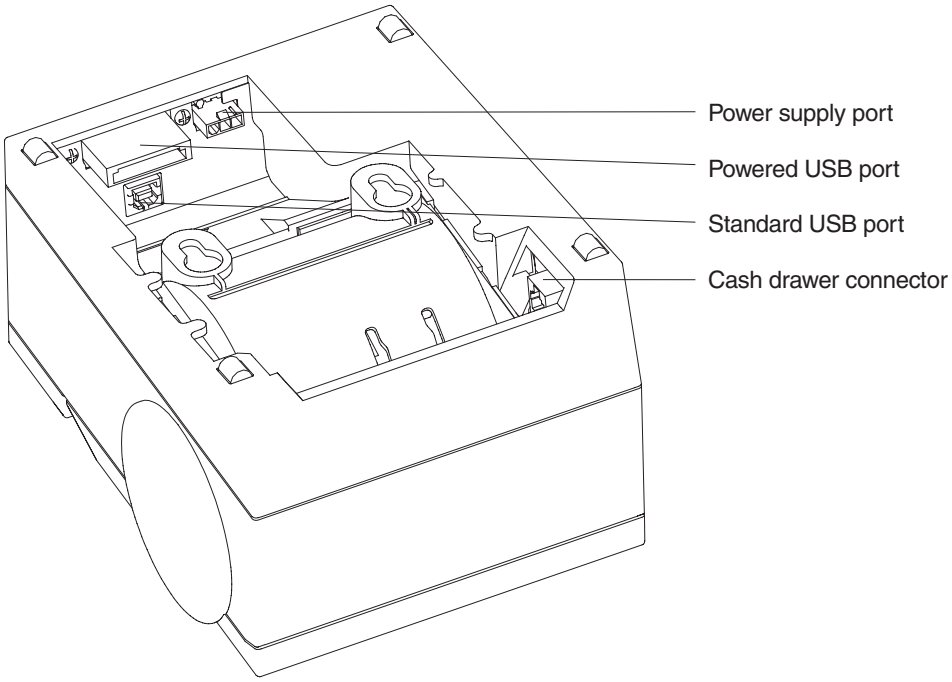
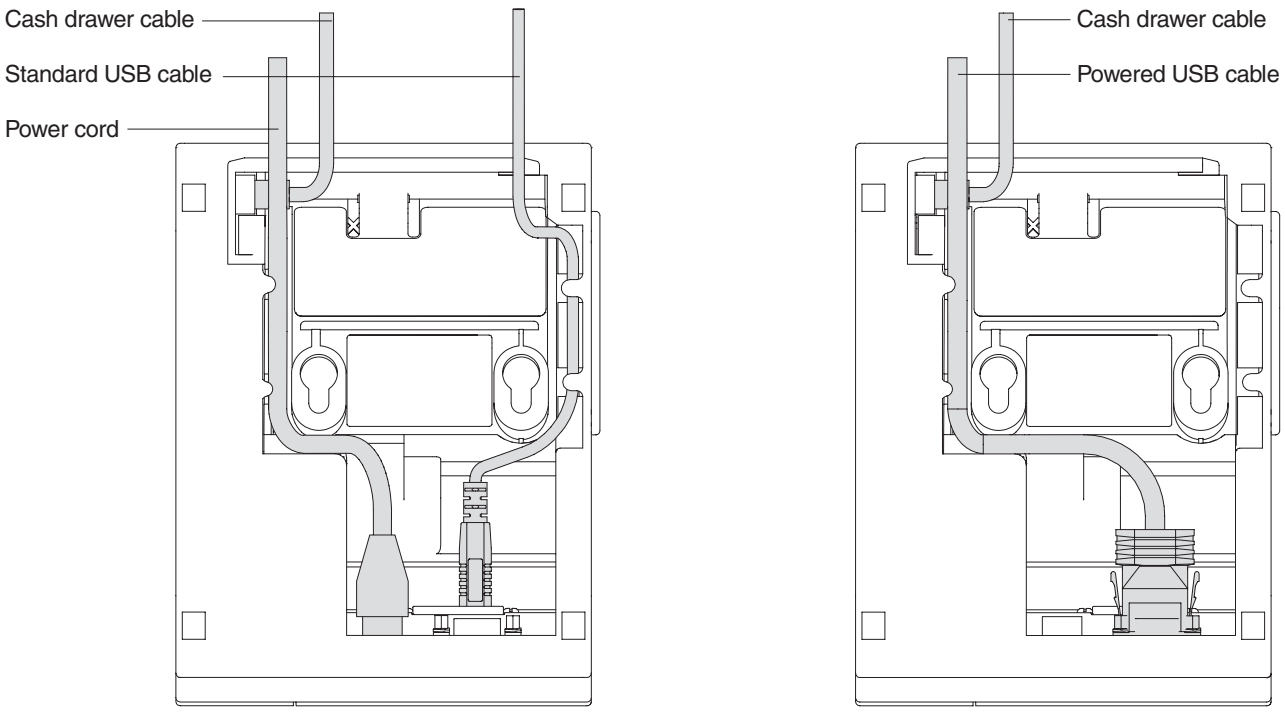


Figure 8. USB Ports for Single-Station SureMark Printers. (View is from the bottom rear of the printer)

2



2
2 *Figure 9. USB Cable Routing for Single-Station SureMark Printers*

Power Supply Connections

The SureMark printer does not contain a power supply. When the RS-232 or USB port is used, an external power supply must be attached to the power supply port of the interface card of the SureMark (see Figure 7 on page 8 or Figure 8 on page 8 for USB mode, and Figure 3 on page 5 or Figure 4 on page 5 for RS-232 mode). This connector is located under the printer and is accessible without removing the printer covers. Connector J2 has the following pin functions:

Pin	Signal	Pin	Signal
1	+24 V dc	2	Not Connected
3	Ground		

When the RS-485 or powered USB port is used, power is supplied to the printer from the IBM POS system.

DANGER

Never work on equipment or connect or disconnect signal cables during periods of lightning activity.

CAUTION:
For your safety, connect equipment requiring electrical power to a correctly wired and grounded outlet.

Note: For translations of these safety notices, see “Appendix D. Translated Safety Notices” on page 201.

To protect the printer from electrical damage, never plug or unplug the RS-232 or the RS-485 connector without deactivating the power first. (You can deactivate the power by either turning off the system unit, or by unplugging the power supply from the electrical outlet. You can also deactivate a single-station SureMark by turning off the printer's power switch.)

Printer Mechanism Overviews

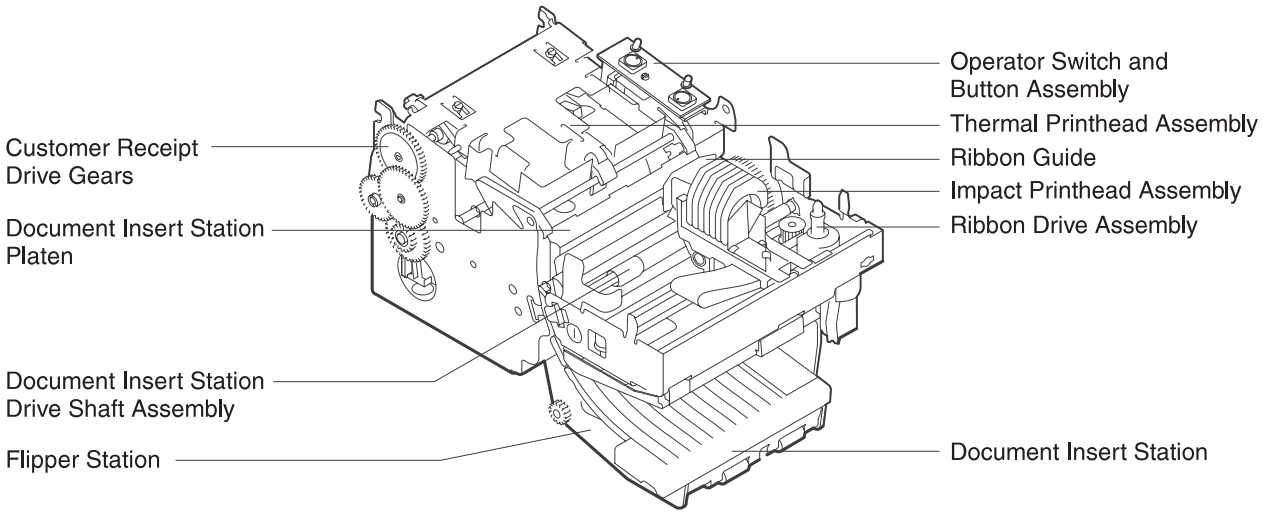


Figure 10. Printer Mechanism Overview – Thermal/Impact Printers

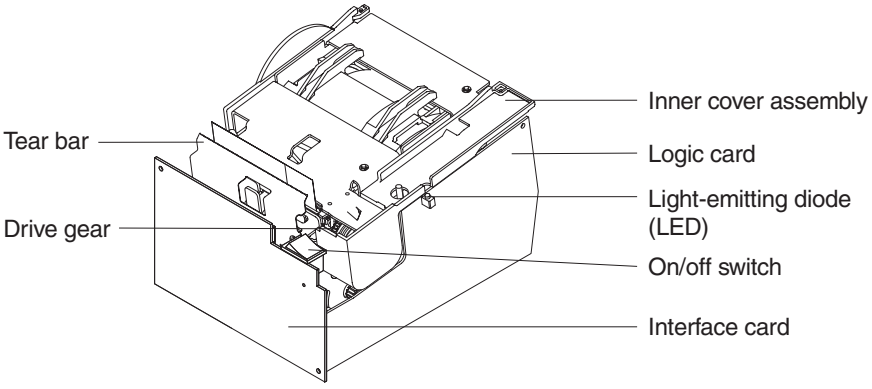


Figure 11. Printer Mechanism Overview – Single-Station Printers

Chapter 2. SureMark Installation, Service, and Utility Software

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This chapter describes how to make software adjustments using either the 4690 OS, IBM Point-of-Sale Device Diagnostics (POSS for Windows, RS-485 and USB only), or diskettes and other resources that are available from the Retail Store Solutions Web site. See “Resources on the Internet” on page 22 for more information.

Software Adjustments (Models TI1, TI2, TI3, TI4, TG3 and TG4)

Depending on your operating system, you can use the following to make software adjustments to the impact (document insert) station of a SureMark printer:

- 4690 Operating System
- IBM POS Device Diagnostics
- Reference/service diskettes

Using the 4690 Operating System

1. Start Utility Mode by pressing **S1**, typing **9 5**, and then pressing **S2**.
2. When “enter request” is displayed, enter the keying sequence from the table for the procedure you want to do.
3. Press **S2** to advance through the various parts of the printer adjustment steps.
4. Type **9 9** and then press **S2** to exit.

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Table 2. Adjustment Procedures Using the 4690 Operating System

Procedure	Keying Sequence
Print Current Adjustment Values - see Figure 12 on page 14.	7, 2, 1, S2
Character Alignment Procedure - see Figure 12 on page 14.	7, 2, 2, S2
DI Front Load Print Line Adjustment - see Figure 12 on page 14.	7, 2, 3, S2
Backlash Adjustment (Landscape)	7, 2, 5, S2
Engineering Use Only	7, 2, 7, S2
Hardware Setup Option	7, 2, 8, S2
Update Printer Firmware	7, 2, 9, S2

Using IBM Point-of-Sale Device Diagnostics

This utility is for RS-485 and USB only.

1. Start the IBM Point-of-Sale Device Diagnostics application from the Windows Start menu.
2. Click **4610 Printer**.
3. Click **Device Utility**.
4. Select the appropriate tab for the desired adjustment:

Table 3. Adjustment Procedures Using the Point-of-Sale Device Diagnostics

Procedure	Tab
Character Alignment	Adjustments
DI Front Load Adjustment	Adjustments
Backlash Adjustment (Landscape)	Adjustments
Engineering Use Only	Read MCT
Firmware Update	Firmware Update
Reset Thermal Print Head Statistics	Reset Stats
Reset CR Motor Statistics	Reset Stats
Reset Impact Print Head Statistics	Reset Stats
Reset DI Motor Statistics	Reset Stats
Reset Transport Motor Statistics	Reset Stats

Using the Reference/Service Diskettes (RS-485 or RS-232 Printers)

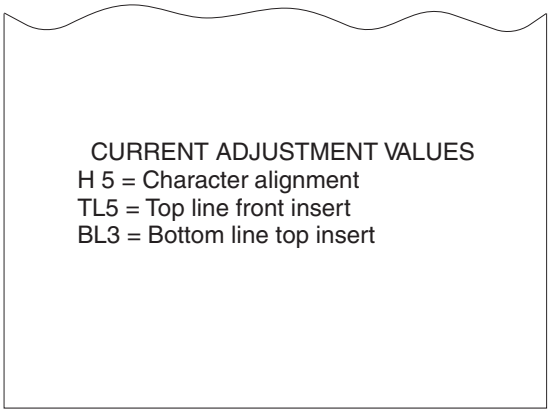
1. Load the reference/service diskette. See the hardware service manual for your system for reference/service diskette procedures.
2. Select **Test Menu**.
3. Select **Run POS Device Tests** for an RS-485 connection. Select **RS232 4610 Printer Test** for an RS-232 connection.
4. If another system is attached, select the system whose printer you want to adjust. This is unnecessary when there is no other system attached.
5. Select **Printer Utilities**.
6. Select the adjustment you want to make from the menu.
   - Print current adjustment values - see Figure 12 on page 14.
   - Character alignment procedure - see Figure 12 on page 14.
   - DI front load print line adjustment - see Figure 12 on page 14.

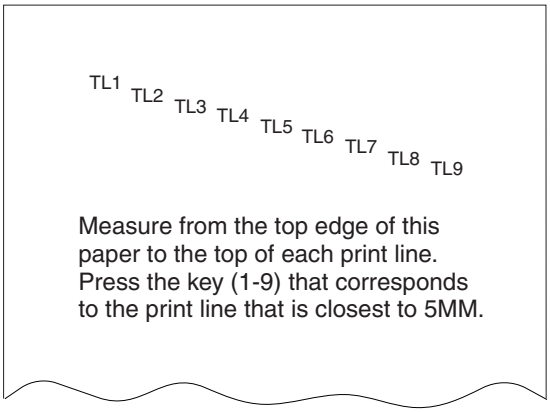
2
- Document landscape adjustment - see Figure 12 on page 14.
- Engineering use only
- Change 4610 Model Configuration

2
- Reset printer statistics

Note: Because the first four adjustments affect only the document insert station, they are not displayed as selectable options if the printer is a single-station SureMark.

2
7. Follow the instructions that are printed on the printer or displayed on the screen.
8. Press **S1** (Esc on the Enhanced A/N Keyboard) to return to the previous menu.





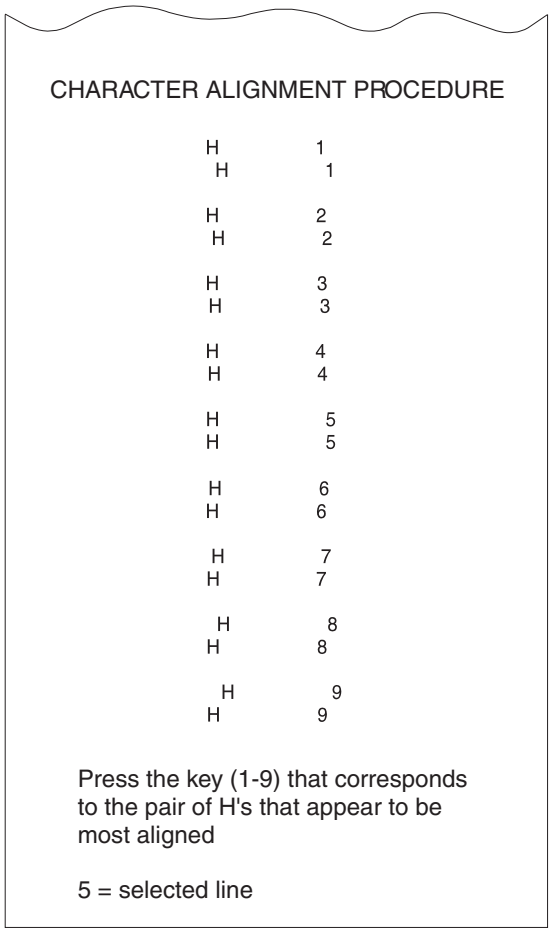


Figure 12. Adjustment and Alignment Printouts

4610 Fonts and Logos Utility Diskette

This utility is for both RS-232 and RS-485 operation. You can download the utility from the Retail Store Solutions Web site. See “Resources on the Internet” on page 22 for more information.

The utility program allows you to perform the following functions:

- Update printer firmware
- Configure the printer model
- Create, edit, and download user-defined character fonts, logo images, and messages
- Download proportional fonts (not supported for models TI1 and TI2)
- Convert fonts and logo files from impact to thermal

From the same Web site, you can also download the following sample files for use with the utility program:

- User-defined characters file
- Message file
- Logo file

Proportional Font Conversion Utility

As part of its support for proportional fonts, IBM provides three TrueType fonts and a utility that you can use to convert the fonts to files that the SureMark printer can use.

The application and instructions for downloading the converted fonts are available from the Retail Store Solutions Web site. See “Resources on the Internet” on page 22 for more information.

Note: You might have TrueType fonts other than those supplied by IBM on your system. Before using the conversion utility to convert and download any non-IBM fonts for use by the SureMark printer, you **must** confirm that you have received authorization from the owner of the fonts to convert and download the fonts.

Firmware Update

The SureMark printer has the capability to receive SureMark firmware updates from the host system unit to which it is attached for either RS-485 attached, RS-232, or USB-attached SureMark printers.

The following mediums can be used to update the SureMark firmware:

- Firmware update diskettes
- POSS for Windows 4610 Printer Firmware Update Program
- 4690 OS 4610 Utility Program
- Alternative 4610 firmware update method via RS-232 attachment cable

Use the appropriate procedure that follows to update the SureMark firmware, after downloading the latest level software from the Retail Store Solutions Web site (see “Resources on the Internet” on page 22).

Using Firmware Update Diskette

Use a firmware update diskette to update the firmware in configurations when the SureMark is attached by either an RS-232 or RS-485 cable, and the system has a floppy diskette drive, a PC keyboard, and display.

1. Download the latest level of firmware update diskette from the Web (see "Resources on the Internet" on page 22). You can select from several update methods, including attended, unattended, and automatic.
2. Insert the firmware update diskette in drive A.
3. Power on the system unit that has the SureMark attached by either an RS-232 or RS-485 cable.
4. Select RS-485 or RS-232 connection.
5. Follow the messages displayed to complete the firmware update.
   a. Press **Enter** (OK) at the logo screen to proceed.
   b. Choose connection type (RS-485 or RS-232). For RS-232 connections, also make the following selections (refer to the communications mode selections switches, located on the bottom rear of the SureMark printer, to determine the following selections):
      - Communications port (COM1, COM2, COM3, COM4)
      - Baud Rate (9600 or 19 200)
      - Control Flow (DTR/DSR or XON/XOFF)
   c. Press **Enter** (OK) to proceed.
   d. Press **F10** (Menu).
   e. Select **O** (Operations).
   f. Select **A** (Advanced Options).
   g. Select **U** (Update Firmware).
   h. Press **Enter** twice to select the desired firmware image file (usually only the latest firmware image file is available for selection).
   i. Press **Enter** (YES) again to commit to firmware update.
   j. The Information screen will display the update percent completed.

   Note: The SureMark flash update will take several minutes. Do NOT power off the host system or the SureMark printer after the update has started.
6. After the firmware update is complete, the SureMark printer will be reset.
   a. Press **Enter** (OK) to confirm.
   b. Press **Alt-X** (Exit).
   c. Press **Enter** to exit.
7. Remove the diskette from drive A.
8. Press **Ctrl-Alt-Del** to reboot the system.

Using POSS For Windows to Update SureMark Printer Firmware (RS-485 and USB Only)

Windows users with SureMark printers can use the POSS for Windows 4610 Printer Firmware Update program (AIPFLD46.EXE) to update SureMark firmware. For additional information, refer to the *POSS Programming Reference and User's Guide*.

Note: POSS Suite V1.0.0 or greater is required to use this utility.

1. Download the latest SureMark firmware update image file from the Web. The file is:
   - AIP46MC.HEX for models TI1 and TI2
   - AIP46MCH.HEX for models TI3, TI4, TG3 and TG4. This file is also for single-station printers with 512KB or 8MB of memory
   - AIP46MCD.HEX for models TI3, TI4,, TG3, TG4, TF6, and TM6 with the 2-MB memory option.
2. Copy the latest SureMark firmware update image file to the C:\POS\BIN directory. Because the file in the directory is more current than the old file, the firmware will be automatically updated when the system is powered off and back on.
3. To update the firmware manually, enter the following command to update the SureMark firmware:

   ```
   AIPFLD46.EXE -S slot_number -P port_number -F microcode_file [-Q]
   ```

   where:

   slot_number
   SureMark slot number, usually = 1. The slot number must be specified with decimal values only; hexadecimal values are not accepted.

   port_number
   SureMark port number specified with a decimal value, usually = 17

   microcode_file
   Either C:\POS\BIN\AIP46MC.HEX, C:\POS\BIN\AIP46MCH.HEX, or C:\POS\BIN\AIP46MCD.HEX

   -Q Quiet mode installation (no progress information)
4. The SureMark flash update will take several minutes.

IBM Point-of-Sale Device Diagnostics

USB printers connected to one of the SurePOS 700 Series systems can use the IBM Point-of-Sale Device Diagnostics to update the SureMark firmware. See *IBM SurePOS 700 Series: System Reference* for more information on the IBM Point-of-Sale Device Diagnostics.

Using 4690 OS 4610 Utility to Update SureMark Firmware

If you use the 4690 OS with SureMark printers that are attached to medialess systems with RS-485 or USB connections, you can use the 4610 Utility Program function of the 4690 OS to update SureMark firmware.

Note: 4690 OS level 9910 or greater is required to use this utility.

1. To invoke the utility, press **Ctrl S1, 95, Ctrl S2**.
2. Press **729, Ctrl, S2** at the ENTER REQUEST prompt.
3. Press **1, Ctrl S2** to continue.
4. Message T7175 will display to confirm flash update has started.
5. The SureMark flash update will take several minutes. Message ″T9514 Enter Request″ displays after the SureMark flash update completes.
6. Enter **99, Ctrl S2** to end the SureMark utility.

Updating SureMark Firmware Using Temporary RS-232 Attachment

To use the firmware update diskettes to update SureMark firmware for configurations that do **not** have a floppy diskette drive and PC display and keyboard, you must provide a temporary RS-232 attachment to a host PC that does have a floppy diskette drive.

Note: A 4610 firmware update diskette at V3.10 or greater is required to use this utility.

Before starting the firmware update, you must obtain the following parts:

- RS-232 attachment cable, either 2 meters in length (P/N 86H2192) or 4 meters in length (P/N 86H2195).
- SureMark Power Supply (for RS-232 configurations only), P/N 42H1176.

If the SureMark is currently attached to a host system unit that does not support a floppy diskette drive, use the following procedure to temporarily connect the printer to a host PC that has a floppy diskette drive, RS-232 port, PC keyboard and display.

1. Disconnect the SureMark (RS-485 #7) attachment cable and temporarily connect a RS-232 attachment cable to the SureMark.
2. Connect the SureMark via the RS-232 port connector to an alternate host PC that has a floppy diskette drive.
3. Follow the procedure in “Using Firmware Update Diskette” on page 16, starting with Step 1, to complete the SureMark firmware update.
4. Reconnect the SureMark to the original host system unit using the original attachment cables.

Limitation on Updating Firmware

The following limitation must be considered when updating firmware on the SureMark printer:

- SureMark firmware update cannot be performed if the printer currently has Model 4 emulation enabled. If emulation is enabled, temporarily disable Model 4 emulation, then start the SureMark firmware update. After the firmware update is complete, re-enable Model 4 emulation. See “Emulating the IBM Model 3 or Model 4 Printers” for additional information.

Emulating the IBM Model 3 or Model 4 Printers

It is possible to emulate the IBM Model 3 or Model 4 printer with the SureMark printer. You must change the configuration to enable the SureMark to emulate the Model 3 or Model 4 printers.

The following mediums can be used to set up Model 3 or Model 4 emulation:

- For systems with diskette drives, use the Font and Logos Utility Diskette or the Configure MCT Utility Diskette (see “Enabling Emulation Using Utility Diskettes” on page 19). Download the latest level diskette from the Retail Store Solutions Web site. See “Resources on the Internet” on page 22 for more information.
- For medialess systems using the 4690 OS, use the 4690 OS Online Terminal Diagnostics (see “Enabling Emulation Using 4690 On-Line Terminal Diagnostics” on page 19).

Enabling Emulation Using Utility Diskettes

The following information is also available in the ***4610MOD4.TXT*** file on the diskette.

Note: All SureMark firmware levels for models TI3, TI4, TG3, TF6 and TM6 support emulation.

To set up Model 3 or Model 4 emulation using the Font and Logos Utility Diskette or the Configure MCT Utility Diskette:

1. Insert the utility diskette in drive A.
2. Power on the system unit.
3. Select **MOD4** when the menu is displayed.
4. Perform the specified steps to either enable or disable emulation.

To enable when emulation is currently disabled:

1. Select one of the following:
   - Model 4 emulation with Offline mode disabled
   - Model 4 emulation with Offline mode enabled

   The printer is reconfigured.
2. Press **Ctrl-Alt-Delete** to reboot the system. The system IPLs.

To disable when emulation is currently enabled:

1. Select Disable Model 4 emulation.
2. Enter **Ctrl-Alt-Delete** to reboot the system. The system IPLs.

Enabling Emulation Using 4690 On-Line Terminal Diagnostics

Note: 4690 OS Version 1 level 9740 or greater is required to use this utility.

To set up Model 3 or Model 4 emulation using the 4690 On-Line Terminal Diagnostics:

1. To invoke the utility, press **Ctrl S1, 95, Ctrl S2**.
2. At the **ENTER REQUEST** prompt, press **728, Ctrl, S2**. This brings up the function to switch the mode of the printer.
3. Perform the specified steps to either enable or disable emulation. The operating system recognizes the current state of printer emulation and displays the appropriate prompts.

To enable emulation:

1. If using the printer's integrated MICR reader, select TI2, TI4 or TG4. Otherwise, select TI1, TI3 or TG3.
2. At the **Activate Model 3/4 Emulation 1=N, 2=Y, S2** prompt, enter **2** to enable Model 3/4 emulation.
3. At the **Using EJ in Offline Mode? 1=N, 2=Y, S2** prompt, select **Y** if you want to store all the journal data in the printer's flash memory.

To disable emulation:

1. At the **Disable Mod 3/4 Emulation 1=N, 2=Y, S2** prompt, enter **2** to disable Model 3/4 emulation.

Limitations for Emulation

The following limitations must be considered when using the SureMark printer to emulate the Model 3 or Model 4 printer.

- Printing the face of checks requires application changes (franking the back of checks should not).
- Printing wide documents may require changes. The document station on the Model 4 printer supports 86 characters, the SureMark supports 47 characters.
- Journal commands can be ignored or stored in the printer's flash memory. This needs to be decided when the printer is initially configured.
- There is no top document registration (documents must be inserted from the front).
- User-defined special characters are not supported.
- Because SureMark models TF6 and TM6 do not have a document insert station, they do not emulate document station commands.
- Emulation mode does not support the Model 4A double-byte character set.
- For RS-485, emulation mode is currently only supported on 4690 OS and DOS systems. For USB, emulation mode is currently only supported on 4690 OS. Emulation is not supported for RS-232.

Printing Saved Data

When the printer is offline in Model 3/4 emulation mode and the option for storing data to the printer was selected, it is possible to fill up the printer flash memory. When the memory is full, a printer error indicates the journal station is out of paper. You can empty the printer buffer by printing out the data that is stored in the flash memory. The data prints on the customer receipt station. The data in the buffer is erased only after the last line of data is printed.

Note: If the SureMark has the 2-MB option installed, up to 3 rolls of paper might be needed to print all the electronic journal data.

Printing Buffer Data – Thermal/Impact Printers

To print the buffer data from the beginning:

1. Press and hold both buttons. When the printer ready indicator begins blinking, release both buttons.
2. Press and release both buttons again.

Notes:

1. If the SureMark printer encounters an error (for example, the paper runs out or the cover is opened) while printing the data, the data remains intact.
2. To stop printing the data, open and close the ribbon cover. When you are ready to print the data, use the procedure above to restart printing from the beginning.
3. To stop printing and restart at the current position, open and close the paper cover. Printing immediately restarts.

Printing Buffer Data – Single-Station Printers

To print the buffer data from the beginning:

1. Open the top cover. The LED will flash quickly.
2. Press and hold the paper feed button for 5 seconds.
3. The LED will show one short blink, accompanied by a beep, followed by a 1-second pause.
4. Press and hold the paper feed button for 5 seconds.

5. The LED will change to a long blink. The beeper will sound continuously.
6. Close the cover to begin printing the electronic journal data.

Notes:

1. If the SureMark printer encounters an error (for example, the paper runs out or the cover is opened) while printing the data, the data remains intact.
2. To stop printing the data, open the top cover, turn the printer power switch ON, turn the printer power switch OFF, and close the top cover. When you are ready to print the data, use the procedure above to restart printing from the beginning.
3. To stop printing and restart at the current position, open and close the top cover. Printing immediately restarts.
4. Pressing and releasing the paper feed button a third time before closing the top cover will cause the printer to return to normal mode.

Emulating an Epson Single-Station Printer (Single-Station Only)

Emulation of an Epson single-station printer is supported on the single-station SureMark printers.

Enabling Epson Emulation

To enable emulation of an Epson single-station printer on a single-station SureMark printer, you must set switch 3 on the main logic card. See Figure 13 for the location of the switch.

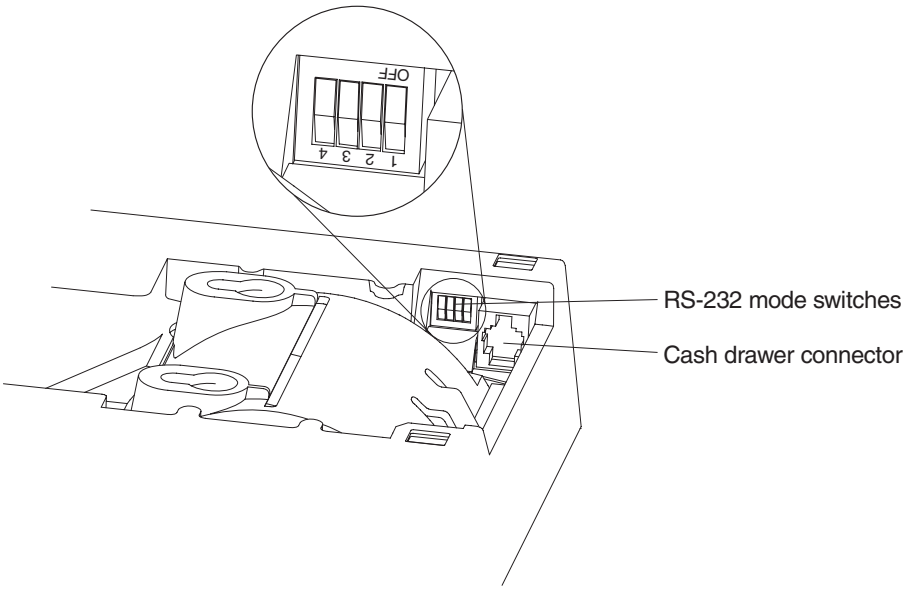


Figure 13. Switch for Epson Emulation

Limitations for Epson Emulation

The following limitations must be considered when using a single-station SureMark printer to emulate an Epson single-station printer:

- Logos and downloadable characters are supported in emulation mode. However, because the Epson printer prints at 150 dpi and the SureMark prints at 200 dpi, the emulated printout will be smaller.
- Emulation of page mode is not supported on the SureMark.

- Epson supports the *Select paper sensor to stop printing* command. IBM does not support a low paper sensor.

MICR Data Parser Sample Code (Models TI2, TI4 and TG4 Only)

The MICR data parser download package includes:

- Sample source code (in C) that contains algorithms for parsing MICR data from a check.
- An exception data file that is used with the parsing code. You can edit this file to add new check formats, if necessary.

Refer to the README file in this download package for additional information.

Resources on the Internet

The IBM Retail Store Solutions Web site at `http://www.ibm.com/solutions/retail/store` contains publications for the SureMark Printer. The Web site also provides access to diskettes, drivers, and miscellaneous documentation, such as README files and information about OEM papers that have been certified.

Select **Support** at the left on the main page of the Web site, then select **IBM SureMark Printer**. The displayed page contains links both to documentation and to diskettes and drivers that you can download for the SureMark printers.

Part 2. Models TI1, TI2, TI3, TI4, TG3 and TG4

This part contains repair/replacement, adjustment, and daily operational procedures for models TI1, TI2, TI3, TI4, TG3 and TG4. It also contains the parts catalog for these models.

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Chapter 3. Problem Determination

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Offline Tests

The following offline tests are used as diagnostic tools to ensure the printer is operating correctly.

Customer Receipt Test

1. Press and hold both buttons to enter offline mode. When the Printer Ready indicator begins blinking, release both buttons.
2. Press and release the Customer Receipt Feed button to start this test.

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3. See Figure 14 on page 27 and verify that your printer has printed correct information for your model and configuration:
   - MICR reader enabled and check flipper enabled (Model TI2, Model TI4, or Model TG4)
   - Double-byte character sets enabled (Model TI5 and TG5)
   - 2-MB card with user flash storage enabled (Models TI3, TI4, TG3, and TG4)
   - 2-MB card in single-byte mode (Model TI5 and TG5)
   - RS-232, RS-485 or USB serial interface
   - Applicable parameters for RS-232 communications:
     – 9600 or 19 200 baud rate
     – DTR/DSR or XON/XOFF control
   - A solid line should appear as the last line of the test pattern.

   If any characters that appear in Figure 14 on page 27 are missing from the test pattern you print, or if the solid line is missing, go to “Symptoms” on page 30.

Document Insert Test

1. Insert a document in the Document Insert station. The Document Present indicator should come on.
   - If the Document Present indicator does not come on, realign the document. If the Document Present indicator still does not come on, go to “Document Sensor Threshold Reset” on page 117.
   - If pressing the Document Feed button does not feed the document, go to “Symptoms” on page 30.
2. Press and hold both buttons to enter offline mode. When the Printer Ready indicator begins blinking, release both buttons.
3. Press and release the document feed button to print the test pattern. The test pattern includes all printable characters in the resident code page, printed in the default font.
4. See Figure 14 on page 27 and verify that your printer has printed correct information for your model and configuration:
   - Model type (MICR reader enabled, check flipper enabled for Model TI2, TI4, or Model TG4).
   - Communication options (RS-232 or RS-485).
   - RS-232 parameters, if applicable.
   - A solid line should appear as the last line of the test pattern.

   If any characters that appear in Figure 14 on page 27 are missing from the test pattern you print, or if the solid line is missing, go to “Symptoms” on page 30.

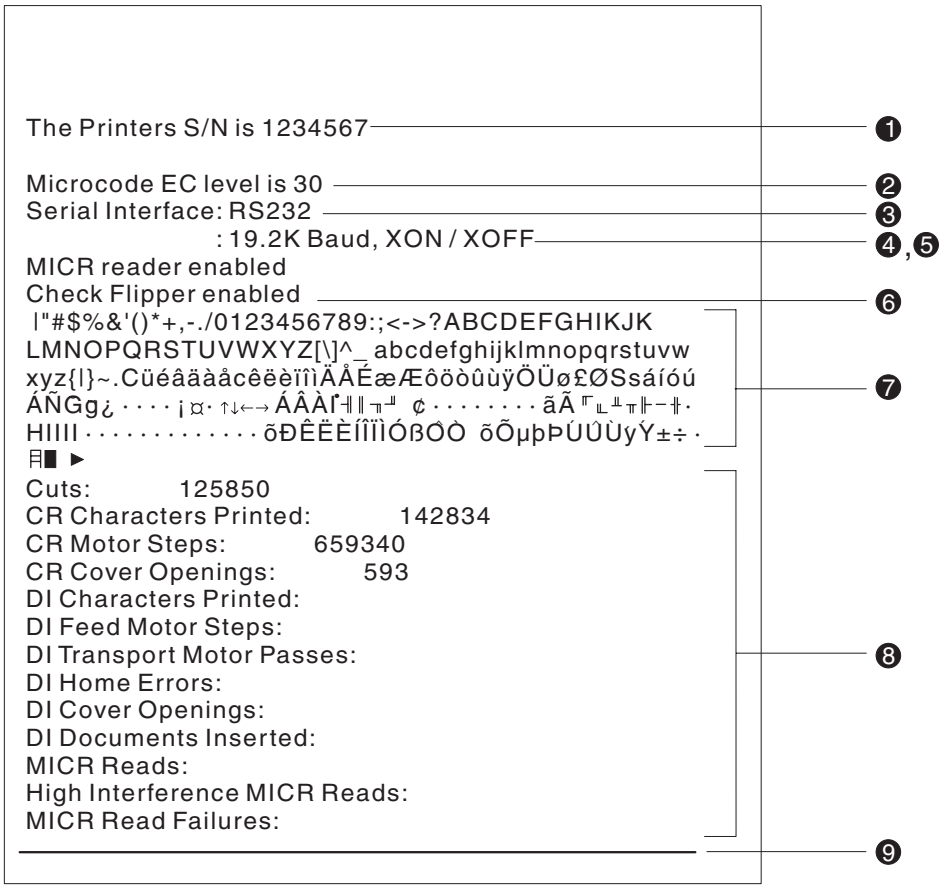

Figure 14. Offline Printer Test Pattern (Thermal/Impact SureMark Printers). This pattern is from the customer receipt (CR) station.

Test Pattern Notes:

1. The serial number that prints will be the actual serial number of your printer.
2. The microcode level will be the actual level of your printer's microcode.
3. The serial interface will be specified as **RS232**, **RS485**, or **USB**, depending on which interface is used to attach the printer to the system unit.
4. The line speed information appears only when the RS-232 interface is used. The value can be either **9.6K baud** or **19.2K baud**, depending on the RS-232 switch settings. (See "Communication Mode Selections" on page 4.)
5. The RS-232 control mode information appears only when the RS-232 interface is used. The value can be either **DTR/DSR** or **XON/XOFF**, depending on the RS-232 switch settings. (See "Communication Mode Selections" on page 4.)
6. The feature enabled lines will appear only when the feature is installed.
7. These lines break at different points for the test pattern printed in the document insert (DI) station.
8. This section contains printer usage statistics that you can use for problem determination. (This information is not printed on models TI1 and TI2.)
9. The line across the bottom should be solid with no blank spaces.

MICR Reader and Check Flipper Test (Models TI2, TI4, and TG4 Only)

Attention: If the printer is in Model 3 or 4 emulation mode, failure to perform these steps in the sequence shown will cause the entire electronic journal to print on the CR station. Printing the electronic journal erases the information from flash storage.

1. Insert the check face down with the magnetic ink characters to the right.
2. Press and hold both buttons to enter offline mode. When the printer ready indicator begins blinking, release both buttons.
3. Press and release both buttons again.
4. Remove the check.

Characters that match the magnetic ink characters are printed on the customer receipt and the check is flipped over. Go to “Symptoms” on page 30 if:

- Characters that match the magnetic ink characters are not printed on the customer receipt.
- Question marks or an ’X’ appear in the printed line.
- Characters that match the magnetic ink characters are printed but the check is not flipped.

If the Model TI2, TI4, or TG4 detects noise, it prints a message on the customer receipt below the magnetic characters from the check (Figure 15 and Figure 16 on page 29 are examples - actual numbers may vary). The message shows noise characteristics. You can use the noise level to position your printer to minimize outside interference with the MICR reader.

Sources of electromagnetic noise (for example, displays, security towers, and other sources) can interfere with the MICR reader read head. If the printer shows an external noise source, rearrange the printer to make the noise source as far away as possible from the right side of the printer. This may eliminate the external noise.

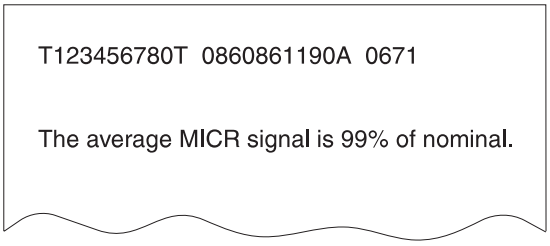

Figure 15. MICR Reader Test Results – Good Noise Level

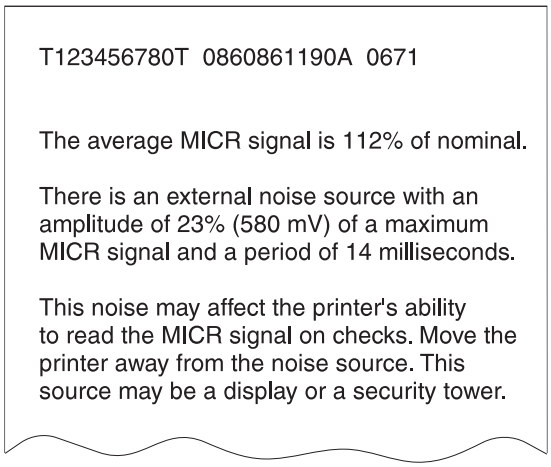
T123456780T 0860861190A 0671
The average MICR signal is 112% of nominal.
There is an external noise source with an amplitude of 23% (580 mV) of a maximum MICR signal and a period of 14 milliseconds.
This noise may affect the printer's ability to read the MICR signal on checks. Move the printer away from the noise source. This source may be a display or a security tower.

Figure 16. MICR Reader Test Results – Noise Level Needs Adjusting

Symptoms

Review the following symptoms or messages and take the suggested actions.

Table 4. Printer Symptoms or Messages

Symptom	Repair Actions Listed in Most Likely Order of Failure
Printer does not power ON (Both LEDs are off).	1. Check for a good connection and that the printer is plugged in. 2. Replace the power supply or system unit. 3. Exchange the printer interface card. Go to “Removing and Replacing the Main Logic Card and Cable-Attached Interface Card (Models TI1 and TI2)” on page 76 or “Removing and Replacing the Main Logic Card and Connector-Attached Interface Card (Models TI3, TI4, TG3, and TG4)” on page 79. 4. Exchange the main logic card. Go to “Removing and Replacing the Main Logic Card and Cable-Attached Interface Card (Models TI1 and TI2)” on page 76 or “Removing and Replacing the Main Logic Card and Connector-Attached Interface Card (Models TI3, TI4, TG3, and TG4)” on page 79.
Printer indicators do not come on.	1. Check that the printer is plugged in and has power. 2. Check for a broken LED. 3. Exchange the switch card. Go to “Removing and Replacing the Switch Card and Printhead Spacer” on page 75. 4. Exchange the main logic card. Go to “Removing and Replacing the Main Logic Card and Cable-Attached Interface Card (Models TI1 and TI2)” on page 76I or “Removing and Replacing the Main Logic Card and Connector-Attached Interface Card (Models TI3, TI4, TG3, and TG4)” on page 79.
Printer Ready LED is blinking.	1. Press the customer receipt feed button. 2. Check the paper supply to ensure that the receipt paper is loaded correctly. 3. Ensure that the covers are closed. 4. Adjust the thermal paper switch. Go to “Thermal Paper Switch Adjustment” on page 116. 5. Run the printer offline tests. Go to “Offline Tests” on page 25.
Customer receipt (thermal) does not advance paper.	1. Check to see if the thermal paper is jammed or loaded incorrectly. 2. Go to “Customer Receipt Paper Movement and Cutter Problems” on page 35 to isolate the problem.
Customer receipt (thermal) is missing character dots.	1. Check to see if the thermal paper is correctly installed. 2. Check to see if the printhead cables are seated correctly. Go to “Removing and Replacing the Thermal Cables and Paper Switch” on page 81. 3. Check and clean the printhead area, if contaminated. 4. Adjust the printhead. Go to “Thermal Printhead Adjustment” on page 114. 5. Exchange the CR (thermal) latch and print assembly. Go to “Removing and Replacing the Thermal Latch” on page 84.
Customer receipt (thermal) randomly missing rows of print, accompanied by one thin line on receipt.	Problem is caused by operator pulling the receipt out of the printer. Instruct operators to use the CR feed button to advance the paper, instead of pulling the paper.

Table 4. Printer Symptoms or Messages (continued)

Symptom	Repair Actions Listed in Most Likely Order of Failure
Cutter does not work correctly.	1. Check that the paper is loaded correctly. 2. Check that the clear plastic paper guide is in the correct position. 3. Perform the Cutter Blade Run-In Procedure. Go to “Cutter Blade Run-In” on page 111. 4. If paper is folded or partially cut, go to “Customer Receipt Paper Movement and Cutter Problems” on page 35.
DI print has missing dots.	1. Ensure the nose of the printhead is clear of debris. 2. Check the printhead platen gap adjustment. Go to “Printhead Platen Gap Adjustment” on page 108. 3. Check the printhead cable for continuity. Unplug the cable at the printhead and logic card for access. 4. Check the printhead for bent print wires. Remove the printhead (see “Removing and Replacing the Printhead” on page 43) for access. 5. Exchange the printhead. Go to “Removing and Replacing the Printhead” on page 43. 6. Exchange the logic card. Go to “Removing and Replacing the Main Logic Card and Cable-Attached Interface Card (Models TI1 and TI2)” on page 76 or “Removing and Replacing the Main Logic Card and Connector-Attached Interface Card (Models TI3, TI4, TG3, and TG4)” on page 79. 7. Exchange any or all of the following components: DI gears, DI feed roll shaft assembly, and feedroll assembly. Go to “Removing and Replacing the Printhead Carriage Assembly” on page 48 and “Removing and Replacing the Cutter Gears and Cutter Clutch” on page 94.
DI station does not advance document/check.	1. Check the paper feed throat for an obstruction. 2. Ensure that the gear train is free. 3. Check the DI open lever adjustment. Go to “DI Open Lever Adjustment” on page 110. 4. Ensure DI forms compensation is correctly set. Go to “DI Forms Compensation Adjustment” on page 106. 5. Exchange the DI motor. Go to “Removing and Replacing the Document Insert Motor and Gears” on page 100. 6. Exchange the DI gears, DI feed roll shaft assembly, and feedroll assembly. Go to “Removing and Replacing the Printhead Carriage Assembly” on page 48 and “Removing and Replacing the Cutter Gears and Cutter Clutch” on page 94. 7. Replace the main logic card. Go to “Removing and Replacing the Main Logic Card and Cable-Attached Interface Card (Models TI1 and TI2)” on page 76 or “Removing and Replacing the Main Logic Card and Connector-Attached Interface Card (Models TI3, TI4, TG3, and TG4)” on page 79.

Table 4. Printer Symptoms or Messages (continued)

Symptom	Repair Actions Listed in Most Likely Order of Failure
DI (impact) printhead does not move correctly.	1. Ensure that the printhead path is free. 2. Check that the transport shafts are not loose. 3. Check the timing belt assembly. If you need to exchange it, go to “Removing and Replacing the Printhead Carriage Assembly” on page 48. 4. Check the tensioner. If you need to exchange it, go to “Removing and Replacing the Tensioner” on page 47. 5. Check the home sensor cable for continuity. 6. Exchange the home sensor (see “Removing and Replacing the Home Sensor” on page 44). 7. Exchange the transport motor. Go to “Removing and Replacing the Transport Motor” on page 52. 8. Replace the main logic card. Go to “Removing and Replacing the Main Logic Card and Cable-Attached Interface Card (Models TI1 and TI2)” on page 76 or “Removing and Replacing the Main Logic Card and Connector-Attached Interface Card (Models TI3, TI4, TG3, and TG4)” on page 79.
Ribbon does not advance.	1. Exchange the ribbon cartridge. Go to “Ribbon Loading” on page 151. 2. Ensure that the ribbon drive is connected to the main logic card (see Figure 32 on page 55). 3. Check the printhead gap and ribbon guide. Go to “Printhead Platen Gap Adjustment” on page 108. 4. Exchange the ribbon drive assembly. Go to “Removing and Replacing the Transport Motor” on page 52. 5. Exchange the main logic card. Go to “Removing and Replacing the Main Logic Card and Cable-Attached Interface Card (Models TI1 and TI2)” on page 76 or “Removing and Replacing the Main Logic Card and Connector-Attached Interface Card (Models TI3, TI4, TG3, and TG4)” on page 79.
Printer Ready and Document Present LEDs are blinking.	1. Press the customer receipt feed button. 2. Check the paper supply. 3. Ensure that both covers are closed. 4. Run the printer offline tests. Go to “Offline Tests” on page 25. 5. Insert a document. 6. Reflash microcode.
MICR does not read correctly.	1. Clean the MICR head with cleaning card. Go to “MICR Reader Read Head Cleaning” on page 157. 2. Ensure that the MICR read head connector is secure. 3. Check for correct assembly of the sensor spring. Replace the spring, if missing. (Refer to Figure 35 on page 58.) 4. Exchange the MICR read head. Go to “Removing and Replacing the MICR Read Head” on page 61. 5. Exchange the pressure pad. Go to “Removing and Replacing the Document Insert Sensor Assembly” on page 56. 6. Exchange the main logic card. Go to “Removing and Replacing the Main Logic Card and Cable-Attached Interface Card (Models TI1 and TI2)” on page 76 or “Removing and Replacing the Main Logic Card and Connector-Attached Interface Card (Models TI3, TI4, TG3, and TG4)” on page 79.

Table 4. Printer Symptoms or Messages (continued)

Symptom	Repair Actions Listed in Most Likely Order of Failure
Flipper is not working.	1. Check the cover for missing or incorrectly installed roller and spring shaft. 2. Remove any debris. 3. Using brush, clean belts of any dust. 4. Ensure that the toggle actuator is correctly installed and not damaged. (Refer to Figure 39 on page 63.) 5. Exchange the flipper cartridge assembly. Go to “Removing and Replacing the Document Insert Lower Cover and Flipper Cartridge” on page 42. 6. Exchange the flipper drive assembly. Go to “Removing and Replacing the Lower Forms Entry Frame or Flipper Assembly” on page 64.
DI not moving documents correctly.	Perform the DI forms compensation adjustment procedure. Go to “DI Forms Compensation Adjustment” on page 106.
Uneven print on receipt.	Go to “Thermal Printhead Adjustment” on page 114.
T7151 Printer card or cable is failing.	1. Check or exchange the printer interface cable. 2. Exchange the printer main logic card. Go to “Removing and Replacing the Main Logic Card and Cable-Attached Interface Card (Models TI1 and TI2)” on page 76 or “Removing and Replacing the Main Logic Card and Connector-Attached Interface Card (Models TI3, TI4, TG3, and TG4)” on page 79.
T7152 home sensor error.	1. Remove any obstruction to printhead movement. 2. Check the printhead gap. 3. Check the home sensor cable continuity. Replace, if necessary. 4. Replace the home sensor. Go to “Removing and Replacing the Printhead Carriage Assembly” on page 48. 5. Exchange the logic card. 6. Exchange the transport motor. Go to “Removing and Replacing the Transport Motor” on page 52
T7153 Ribbon cover is open.	1. Close the cover. 2. Exchange the ribbon cover. Go to “Removing and Replacing the Top, Paper, and Ribbon Covers” on page 37. 3. Exchange the main logic card. Go to “Removing and Replacing the Main Logic Card and Cable-Attached Interface Card (Models TI1 and TI2)” on page 76 or “Removing and Replacing the Main Logic Card and Connector-Attached Interface Card (Models TI3, TI4, TG3, and TG4)” on page 79.
T7156 Document is inserted in the printer and printer fails.	1. Check for obstructions. 2. Rerun the diagnostic test. 3. Exchange the DI sensor, then reset the sensor threshold. Go to “Removing and Replacing the Document Insert Sensor Assembly” on page 56, then “Document Sensor Threshold Reset” on page 117.
T7157 Document was not removed when expected or DI sensor is failing.	1. Exchange the document and run the test again. 2. Exchange the DI sensor. Reset the sensor threshold. Go to “Removing and Replacing the Document Insert Sensor Assembly” on page 56, then “Document Sensor Threshold Reset” on page 117.
T7159 EEPROM error.	Exchange the main logic card. Go to “Removing and Replacing the Main Logic Card and Cable-Attached Interface Card (Models TI1 and TI2)” on page 76 or “Removing and Replacing the Main Logic Card and Connector-Attached Interface Card (Models TI3, TI4, TG3, and TG4)” on page 79.

Table 4. Printer Symptoms or Messages (continued)

Symptom	Repair Actions Listed in Most Likely Order of Failure
T7161 Command reject.	An invalid command was sent to the printer.
T7163 Flipper error.	See ″Flipper is not working″ symptom.
T7164 MICR check movement error.	1. Be sure that the check does not exceed 277 mm (10.9 in.) long. 2. Run the check offline procedure. Go to “Offline Tests” on page 25. The printer should move the check all the way up through the DI station then back while reading the MICR.
T7165 CR paper is empty or cover is open.	1. Ensure that paper is in the printer and both covers are closed. 2. Press the customer receipt feed button to advance about 76 mm (3 in.) of paper. 3. Check to see if the paper is installed correctly in the customer receipt station. 4. Open the customer receipt cover and manually press the switch. 5. Adjust the switch. Go to “Thermal Paper Switch Adjustment” on page 116. 6. Exchange the main logic card. Go to “Removing and Replacing the Main Logic Card and Cable-Attached Interface Card (Models TI1 and TI2)” on page 76 or “Removing and Replacing the Main Logic Card and Connector-Attached Interface Card (Models TI3, TI4, TG3, and TG4)” on page 79.
T7166 Firmware error.	1. Update the SureMark firmware by downloading a new image from the utility diskette. Go to “Chapter 2. SureMark Installation, Service, and Utility Software” on page 11. 2. Exchange the main logic card. Go to “Removing and Replacing the Main Logic Card and Cable-Attached Interface Card (Models TI1 and TI2)” on page 76 or “Removing and Replacing the Main Logic Card and Connector-Attached Interface Card (Models TI3, TI4, TG3, and TG4)” on page 79.

Customer Receipt Paper Movement and Cutter Problems

This procedure helps isolate customer receipt (thermal) paper movement or paper cutting problems.

If paper is ″accordioned″ or wrapped around the platen, the paper guide may be caught under the main cover or something may have blocked the paper from freely exiting the printer.

1. Remove the covers. Go to “Removing and Replacing the Top, Paper, and Ribbon Covers” on page 37.
2. Ensure that the thermal paper is loaded and the thermal printhead is latched.
3. Turn the thermal idler gear clockwise (see Figure 17 on page 36). All four gears should turn and the platen should move the paper forward.

   Note: It is normal for there to be a time lag of more than 1/2 rotation of the gear before the paper starts moving.

   - If all the gears did not turn, exchange the failing gear.
   - If the platen did not turn the paper, exchange the platen and the bearings. See “Removing and Replacing the Document Insert Platen Assembly” on page 59.
   - If it is difficult to turn the gears and advance the paper, replace the clutch. See “Removing and Replacing the Cutter Gears and Cutter Clutch” on page 94.
4. Turn the thermal idler gear counterclockwise 1-1/4 rotations, then clockwise 1-1/4 rotations. All four gears should turn and the two gears on the inside of the frame should turn and move the lever on the rotating blade to cut the paper.
   - If the blades closed, but did not cut the paper, replace both blades.
   - If it was difficult to close the blades or there was a noticeable hang-point during the cut, replace both blades. Go to “Cutter Blade Run-In” on page 111.
   - If the blades did not close, replace the failing gear.
   - If the blades closed, but did not open, replace the clutch.
5. If all of the above hardware worked correctly:
   a. Temporarily restore power to the printer. With the customer receipt cover open, press the customer receipt feed button to ensure that the motor rotates the platen. Remove power from the printer by either unplugging it from the wall outlet or turning off the system unit.
   b. If the platen does not rotate, exchange the customer receipt motor. See “Removing and Replacing the Customer Receipt Motor” on page 92. Ensure that the thermal paper is loaded and the paper cover is latched.
   c. If the platen still does not rotate, exchange the main logic card. Depending on how the main logic card is attached, see “Removing and Replacing the Main Logic Card and Cable-Attached Interface Card (Models TI1 and TI2)” on page 76 or “Removing and Replacing the Main Logic Card and Connector-Attached Interface Card (Models TI3, TI4, TG3, and TG4)” on page 79.

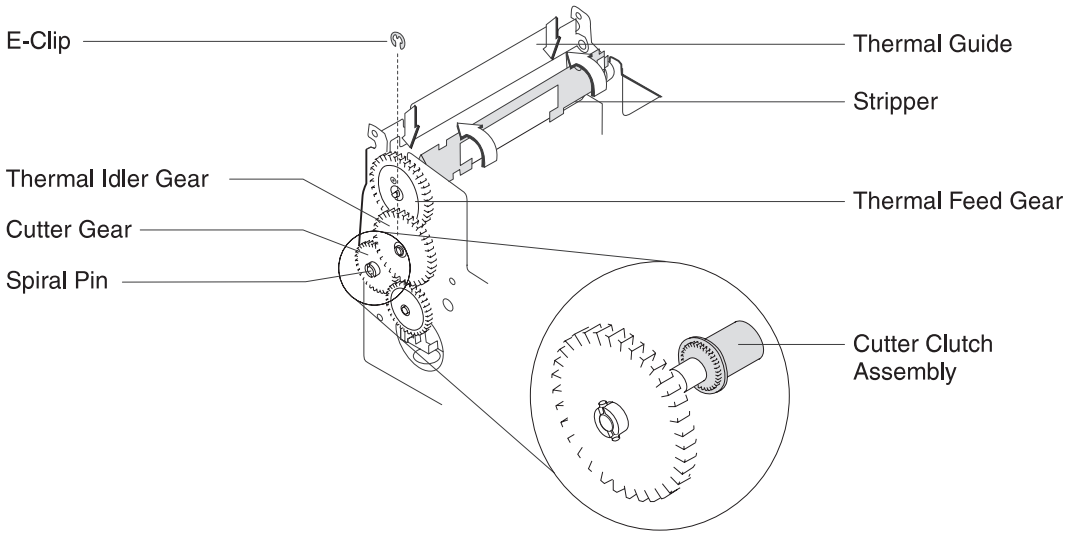

Figure 17. Customer Receipt Gears

FRU Removal and Replacement

This section includes removal and replacement procedures for the SureMark printer field replaceable units (FRUs).

Removing and Replacing the Top, Paper, and Ribbon Covers

Important

This procedure shows you how to remove the printer covers (FRUs). Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

Note: It is possible to remove the top cover, paper cover, and ribbon cover as one unit by opening the paper cover and ribbon cover and removing the top cover.

1. **Power OFF** the printer by either powering off the system or unplugging the external power source from the wall outlet.
2. Open the **paper cover**. Place the top of the screwdriver handle between the side of the printer and the top cover. Then close the top cover on the screwdriver, one side at a time. This frees the pivots on both sides. Slide the paper cover forward and out. See Figure 18 on page 39.
3. Open the **ribbon cover** using the lift tab. From the right side, push the **ribbon cover** towards the left side while pressing the lock tab, and remove.
4. Remove the **top cover**. Pull the front of the top cover forward and off the mounting post. See Figure 19 on page 40.
5. Reach in and release the rear latch in the CR paper well.

   Note: Make sure that the front shock is correctly seated in the top cover before installing a new top cover.
6. Lift the front of the top cover outward and upward until it clears the post.
7. Pull the bottom left side of top cover locking latch outward and upward until the side is clear of the track guide. See Figure 19 on page 40. Pull the latch forward while pulling up on the rear of the top cover until the latch clears. Lift the top cover clear.
8. Reassemble.

   Attention: When reassembling, be sure that the clear plastic paper guide is inserted through the slot in the paper cover.

Choose one of the following links to return to the procedure from which you came:

- "Removing and Replacing the Top Cover Operator Buttons" on page 41
- "Removing and Replacing the Document Insert Lower Cover and Flipper Cartridge" on page 42
- "Removing and Replacing the Printhead" on page 43
- "Removing and Replacing the Ribbon Drive Assembly" on page 45
- "Removing and Replacing the Tensioner" on page 47
- "Removing and Replacing the Printhead Carriage Assembly" on page 48
- "Removing and Replacing the Transport Motor" on page 52
- "Removing and Replacing the Document Insert Sensor Assembly" on page 56
- "Removing and Replacing the Document Insert Platen Assembly" on page 59

- “Removing and Replacing the MICR Read Head” on page 61
- “Removing and Replacing the DI Feed Roller” on page 71
- “Removing and Replacing the Main Logic Card and Cable-Attached Interface Card (Models TI1 and TI2)” on page 76
- “Removing and Replacing the Main Logic Card and Connector-Attached Interface Card (Models TI3, TI4, TG3, and TG4)” on page 79
- “Removing and Replacing the Thermal Cables and Paper Switch” on page 81
- “Removing and Replacing the Thermal Drag Strip” on page 86
- “Removing and Replacing the Thermal Platen Assembly” on page 91
- “Removing and Replacing the Customer Receipt Motor” on page 92
- “Removing and Replacing the Customer Receipt Paper Guide” on page 96
- “Removing and Replacing the Document Insert Motor and Gears” on page 100

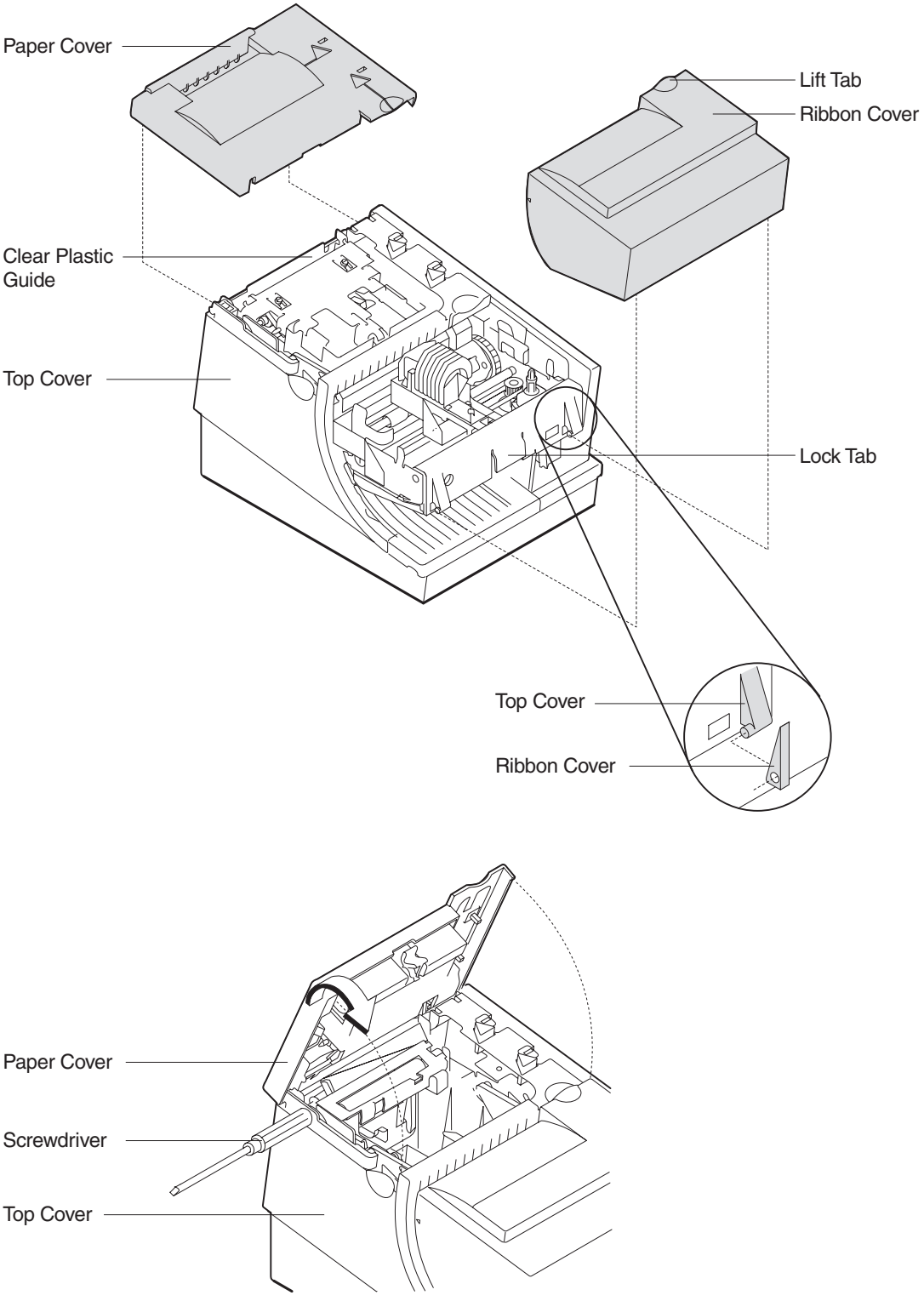

Figure 18. Removing the Paper and Ribbon Covers

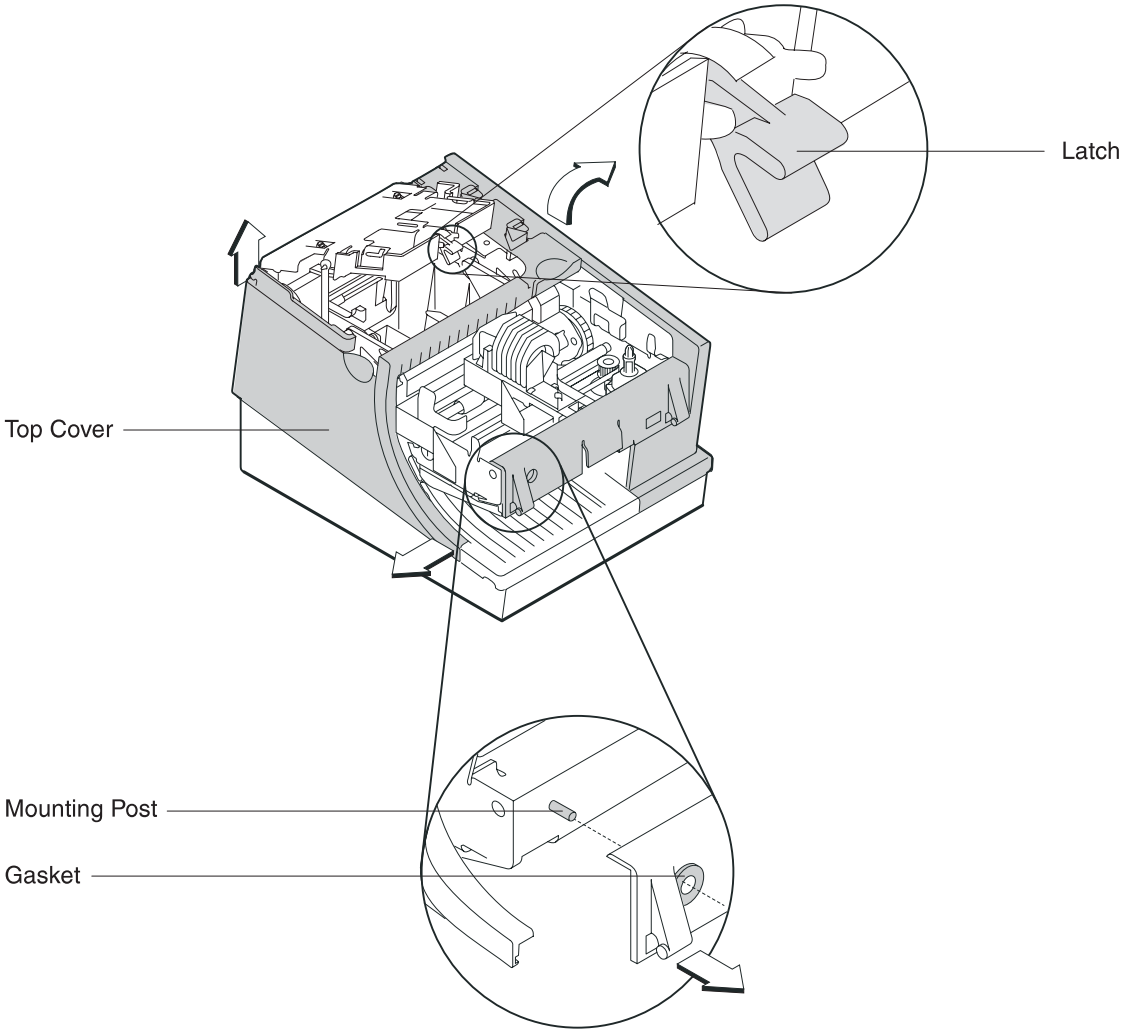

Figure 19. Removing the Top Cover

Removing and Replacing the Top Cover Operator Buttons

Important

This procedure shows you how to remove the top cover and the operator button (FRUs). Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

1. Remove the covers. Go to “Removing and Replacing the Top, Paper, and Ribbon Covers” on page 37.
2. On the under side of the cover, press both sides of the **key button** latch inward and lift the button out. See Figure 20.
3. Reassemble.

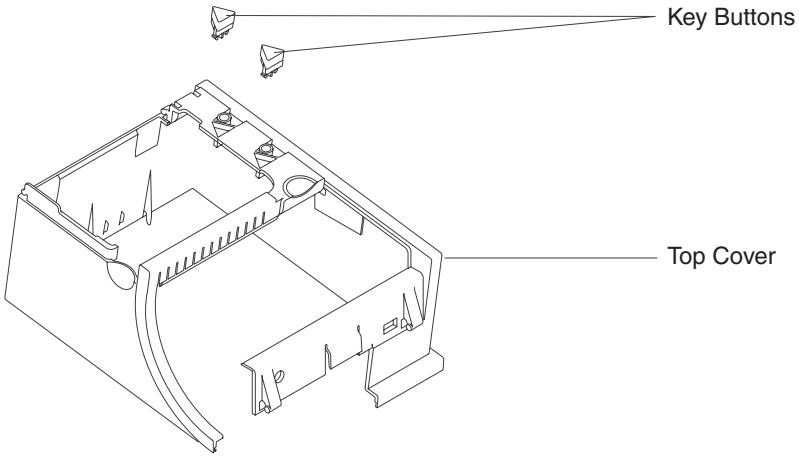

Figure 20. Removing the Operator Buttons in the Top Cover

Removing and Replacing the Document Insert Lower Cover and Flipper Cartridge

Important

This procedure shows you how to remove the flipper cover and the flipper cartridge (FRUs). Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

Use the following link to return to the procedure from which you came:

- "Removing and Replacing the MICR Read Head" on page 61.

1. Remove the **flipper cover**. Lift up and outward to remove the flipper cover. See Figure 21.
2. Use lift tab to remove the **flipper cartridge**.
3. Reassemble.

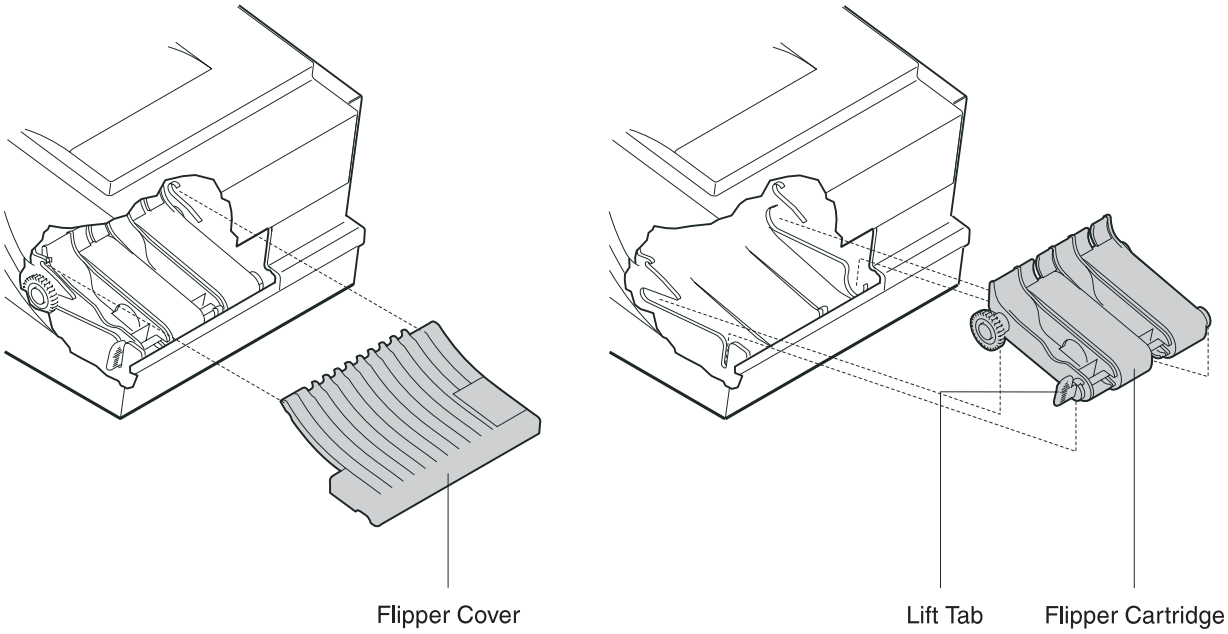

Figure 21. Removing the Document Insert Feed Cover and the Flipper Cartridge

Removing and Replacing the Printhead

Important

This procedure shows you how to remove the printhead FRU. Stop when you get to the failing FRU, exchange the FRU, and reassemble. The FRUs are highlighted.

1. **Power OFF** the printer by either powering off the system or unplugging the external power source from the wall outlet.
2. Open the ribbon cover. Go to “Removing and Replacing the Top, Paper, and Ribbon Covers” on page 37.
3. Remove the ribbon cartridge.
4. Remove the mounting screw from the printhead. See Figure 22.
5. Lift the **printhead** out of the carrier and disconnect the printhead cable.
6. Remove any dust from the home sensor.
7. Reassemble.
8. Adjust the printhead gap. Go to “Printhead Platen Gap Adjustment” on page 108.
9. When you replace the impact printhead, run the service diskette and select **Reset Statistics** for the FRU. See “Software Adjustments (Models TI1, TI2, TI3, TI4, TG3 and TG4)” on page 11.

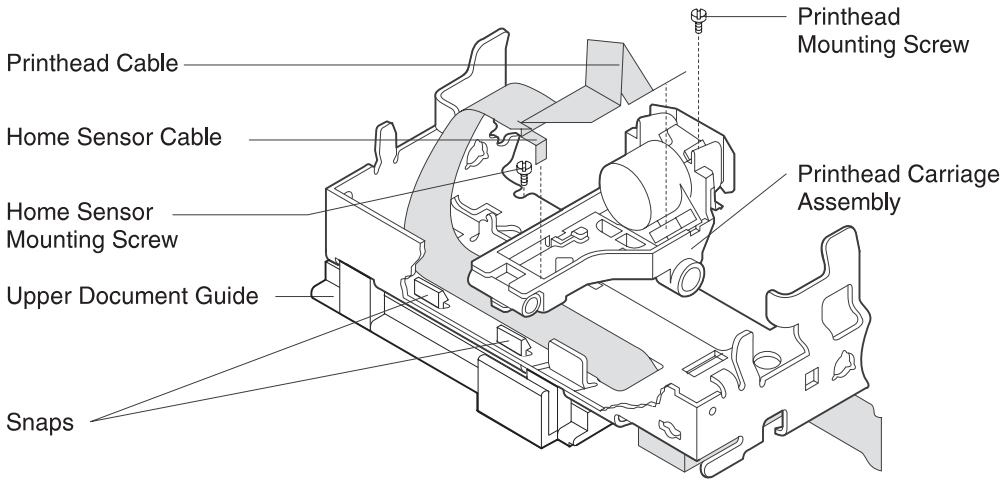

Figure 22. Replacing the Printhead

Removing and Replacing the Home Sensor

Important

This procedure shows you how to remove the home sensor FRU. Stop when you get to the failing FRU, exchange the FRU, and reassemble. The FRUs are highlighted.

1. **Power OFF** the printer by either powering off the system or unplugging the external power source from the wall outlet.
2. Open the ribbon cover. Go to “Removing and Replacing the Top, Paper, and Ribbon Covers” on page 37.
3. Remove the ribbon cartridge.
4. Disconnect the home sensor cable. See Figure 22 on page 43.
5. Move the impact printhead assembly to the middle of the printer.
6. Loosen the home sensor mounting screw.
7. Remove the home sensor from beneath the impact printhead carriage (see Figure 28 on page 51).
8. Reassemble.

updated October 30, 2001

Removing and Replacing the Ribbon Drive Assembly

Important

This procedure shows you how to remove the ribbon drive FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted. Use the following link to return to the procedure from which you came:

- "Removing and Replacing the Transport Motor" on page 52.

1. Remove the covers. Go to "Removing and Replacing the Top, Paper, and Ribbon Covers" on page 37.
2. Remove the **front shock mount**. Turn the front shock mount 1/4 turn counterclockwise (end rib will be horizontal), then pull it out. See Figure 23 on page 46.
3. Disconnect the **ribbon drive assembly cable** from the main logic card. See Figure 23 on page 46.
4. Disconnect the printhead cable before lifting the printer assembly.
5. Remove the **ribbon drive assembly**. Lift the frame upward and pull the ribbon drive assembly locking arm out.
6. Pull the ribbon drive toward the front of the printer and move it down and out.

   Note: Ensure that the logic card is completely seated in the base when reassembling.
7. Reassemble.
8. Check cables for good seat on logic card.

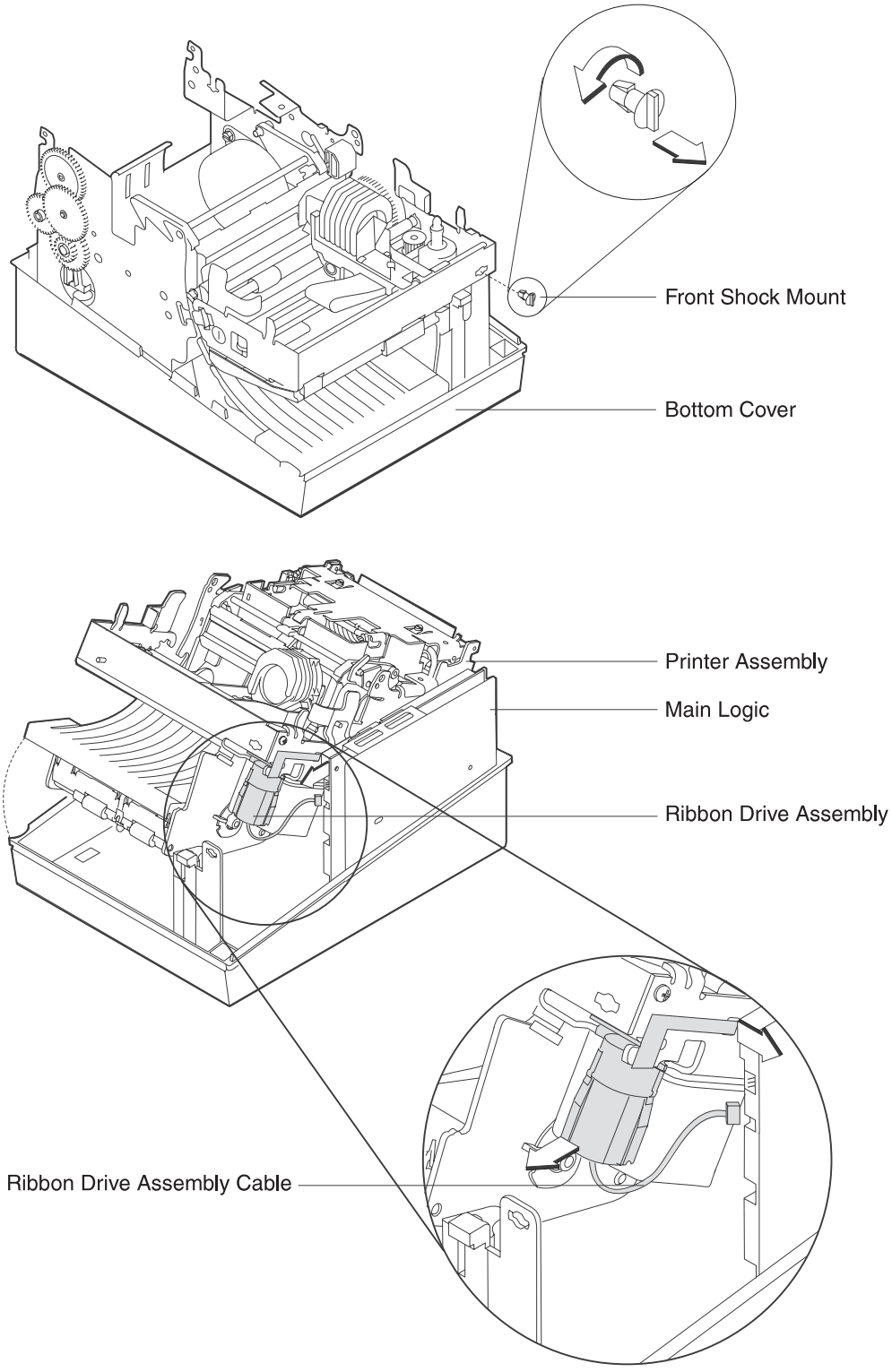

Figure 23. Removing the Ribbon Drive Assembly

Removing and Replacing the Tensioner

Important

This procedure shows you how to remove the tensioner FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

1. Open the ribbon cover.
2. Position the carriage assembly in the center. See Figure 24.
3. Push the tensioner inward and remove the timing belt from the transport motor pulley.
4. Remove the **tensioner spring**.
5. Remove the **tensioner** by sliding it towards the right and lifting it out.
6. Reassemble.
7. Run one of the 4610 diagnostic and adjustment utilities. See “Software Adjustments (Models TI1, TI2, TI3, TI4, TG3 and TG4)” on page 11.

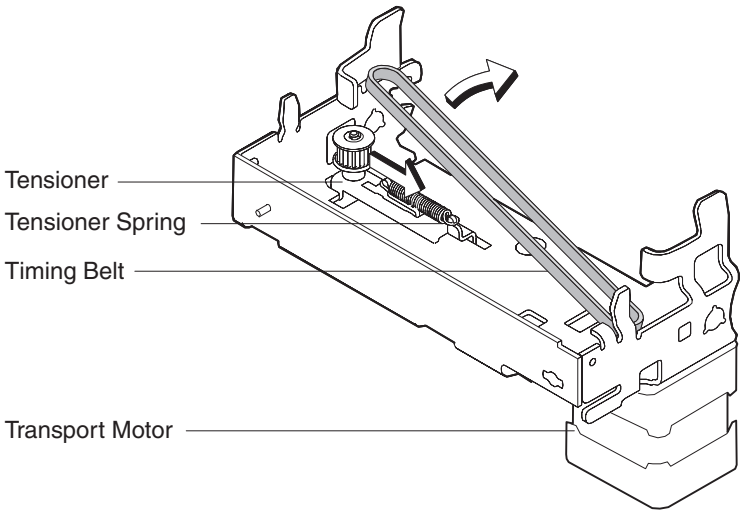

Figure 24. Removing the Tensioner

Removing and Replacing the Printhead Carriage Assembly

Important

This procedure shows you how to remove the printhead carriage assembly FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

1. Remove the covers. Go to “Removing and Replacing the Top, Paper, and Ribbon Covers” on page 37.
2. Position the carriage assembly on the right side of the printer.
3. Push the tensioner inward and remove the **timing belt** from the transport motor pulley. See Figure 25 on page 49.
4. Disconnect the printhead/home sensor cable from the printhead and home sensor. Thread the cable through the printhead carrier. See Figure 26 on page 49.
5. Turn the bushing on the right side of the printer transport shaft counterclockwise until locking tabs align with the release slots, which are visible on the inside of the frame. Remove the **rear transport shaft**. If necessary, replace the **bushing**. See Figure 27 on page 50.
6. Remove the **printhead carriage assembly**. See Figure 27 on page 50.

   Note: Steps 7, 8, and 9 describe removals of individual FRUs. You can remove each FRU separately without removing other FRUs. Choose one or all of these steps to remove the failing FRUs, and then proceed with step 10.
7. Remove the screw holding the home sensor to the printhead carriage assembly. Remove the **home sensor**. See Figure 28 on page 51.
8. Remove the two screws from the **ribbon guide**, pivot the platen toward the rear, and remove the ribbon guide. See Figure 26 on page 49.
9. Remove the **timing belt** from the **printhead carriage assembly**. See Figure 25 on page 49 and Figure 27 on page 50.
10. Remove the screw from the front transport shaft and slide it out from the left side. See Figure 27 on page 50.
11. Remove the **front transport carrier bearing**. See Figure 27 on page 50.
12. Reassemble.
13. Adjust the printhead.
14. Run one of the 4610 diagnostic and adjustment utilities. See “Software Adjustments (Models TI1, TI2, TI3, TI4, TG3 and TG4)” on page 11.

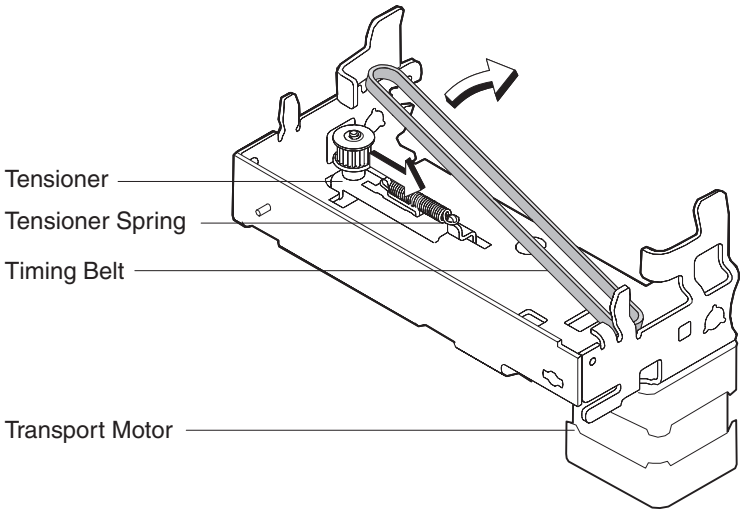

Figure 25. Removing the Timing Belt

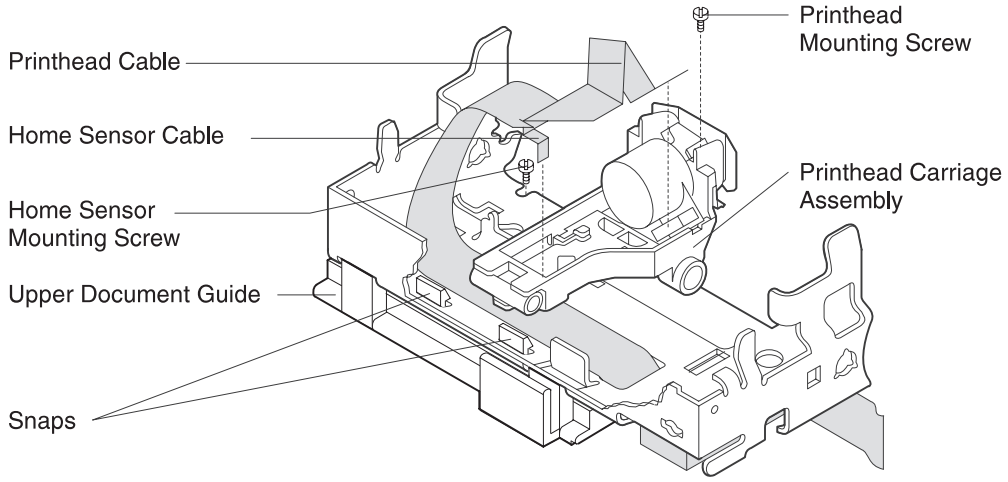

Figure 26. Removing the Printhead/Home Sensor Cable

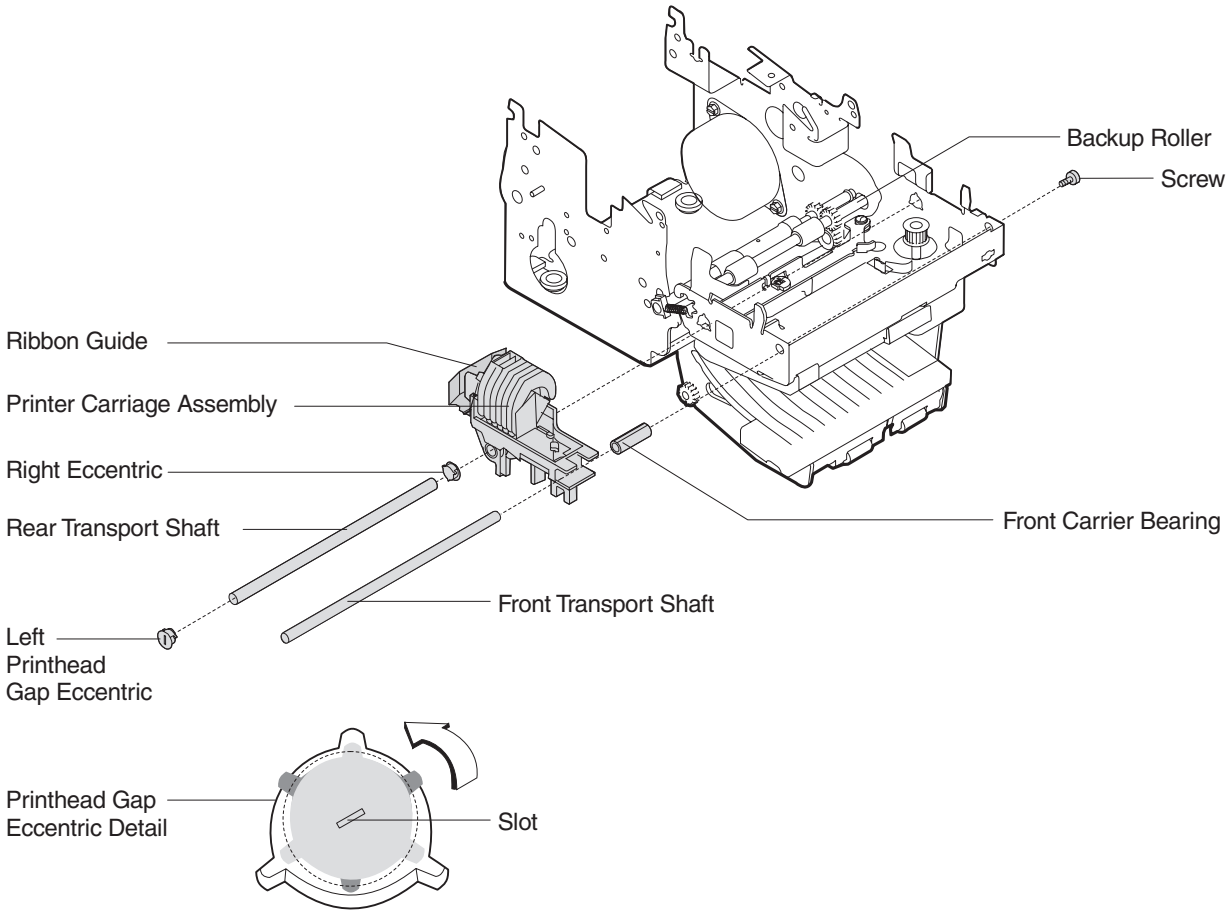

Figure 27. Removing the Carriage Assembly, Front or Rear Transport Shafts

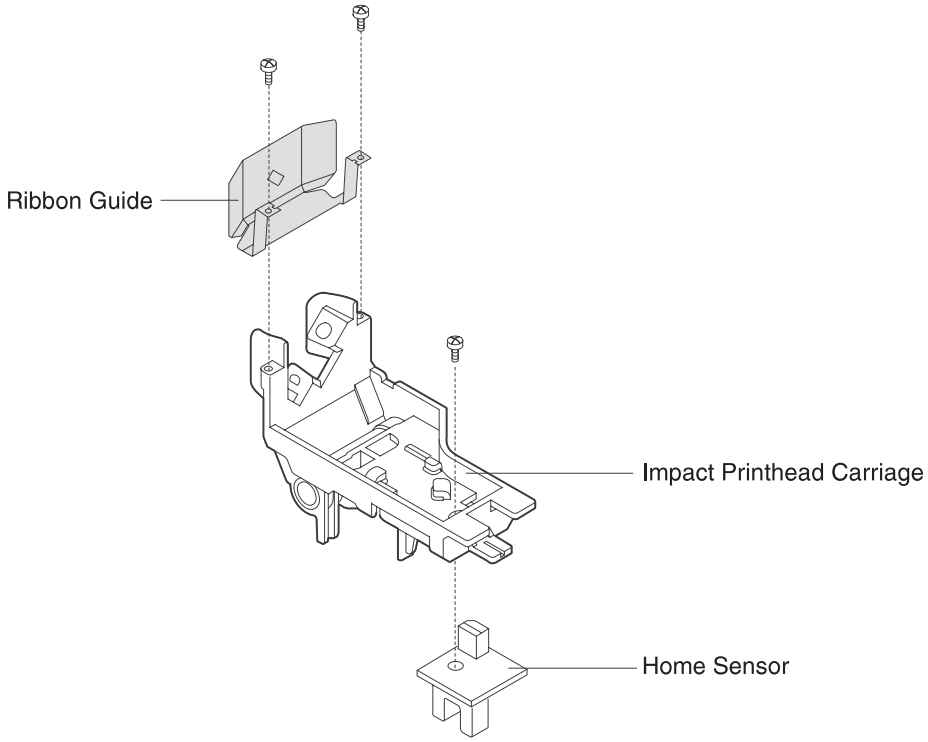

Figure 28. Removing the Front Transport Carrier Bearing

Removing and Replacing the Transport Motor

Important

This procedure shows you how to remove the transport motor FRU. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

1. Remove the covers. Go to “Removing and Replacing the Top, Paper, and Ribbon Covers” on page 37.
2. Remove the ribbon drive assembly. Go to “Removing and Replacing the Ribbon Drive Assembly” on page 45.
3. Disconnect the printhead cable from the main logic card. Go to “Removing and Replacing the Printhead Cable” on page 55.
4. Position the carriage assembly on the right side of the printer. See Figure 29 on page 53. Push the tensioner inward and remove the timing belt from the transport motor pulley.
5. Turn the bushing on the right side of the printer transport shaft counterclockwise until locking tabs align with the release slots. Remove the rear transport shaft. If necessary, replace the bushing. See Figure 30 on page 53.

   Note: If the rear transport motor screw can be removed and secured with the transport shaft in place, this step can be omitted.
6. Disconnect the transport motor cable from the main logic card.
7. Remove the two screws holding the transport motor to the frame.
8. Lift the printer frame upward enough to remove the transport motor. Remove the **transport motor**. See Figure 31 on page 54.
9. Reassemble.
10. If the transport shaft was removed, adjust the printhead gap. Go to “Printhead Platen Gap Adjustment” on page 108.
11. When you replace the transport motor, run the service diskette and select **Reset Statistics** for the FRU. See “Software Adjustments (Models TI1, TI2, TI3, TI4, TG3 and TG4)” on page 11.

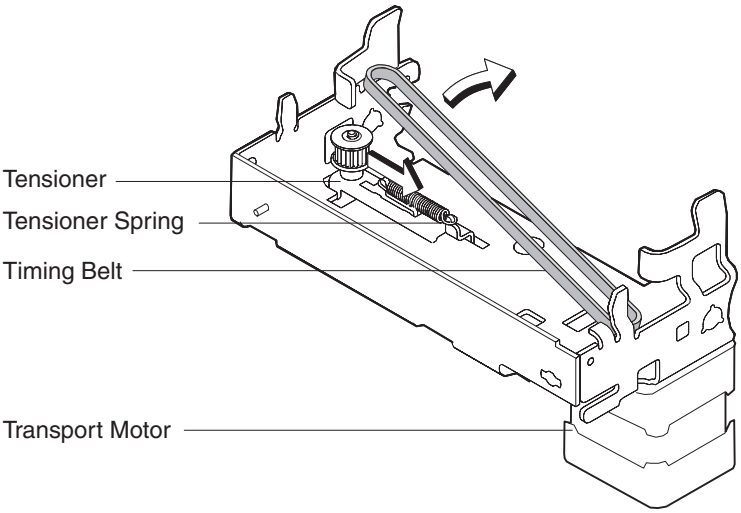

Figure 29. Removing the Timing Belt

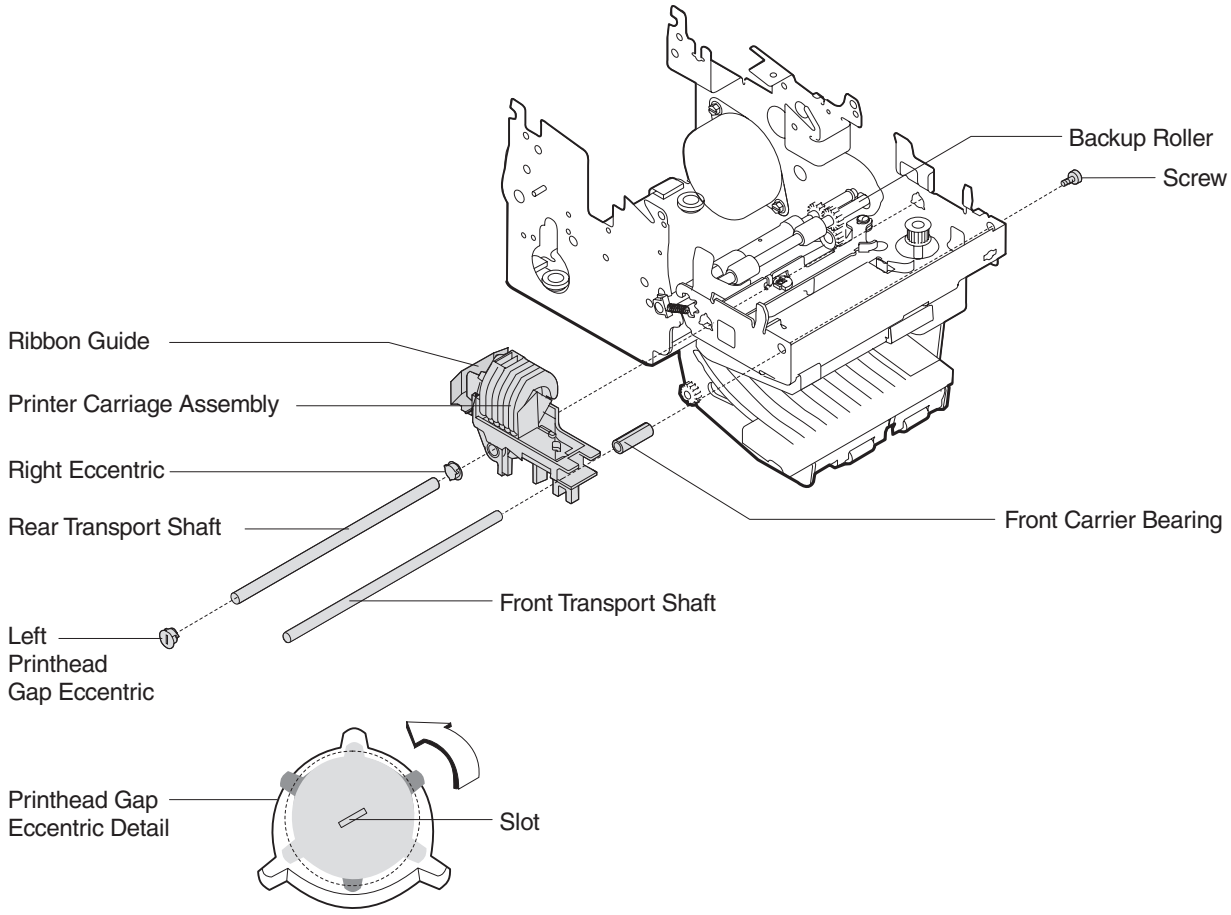

Figure 30. Turning the Bushing and Removing the Transport Shaft

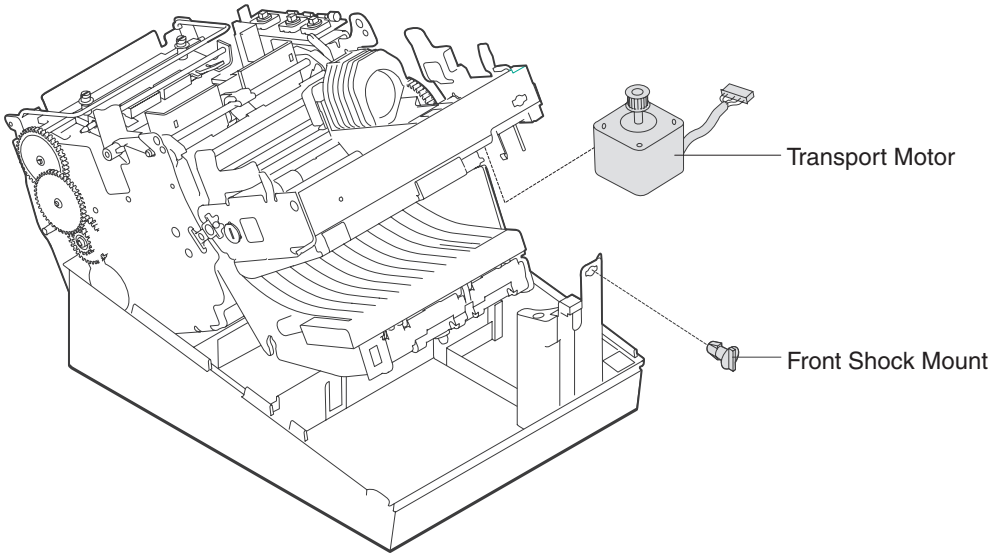

Figure 31. Removing the Transport Motor

Removing and Replacing the Printhead Cable

Important

This procedure shows you how to remove the printhead cable FRU. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

1. Remove the covers. Go to “Removing and Replacing the Top, Paper, and Ribbon Covers” on page 37.
2. Remove the ribbon drive assembly. Go to “Removing and Replacing the Ribbon Drive Assembly” on page 45.
3. Disconnect the printhead cable from the main logic card.
4. Disconnect the **printhead cable** and the home sensor from the printhead and pull it through and out of the carriage assembly. See Figure 32.
5. Make an alignment mark across the edge of the cable, partly on the cable and partly on the frame. (See Figure 32.)
6. Peel the adhesive loose from the frame.
7. Lift the printer frame upward and unsnap the two front latches, which hold the upper document guide, by pressing forward and down with a screwdriver to loosen the upper document guide (see Figure 26 on page 49).
8. Pull the printhead cable through and out of the frame.

   Note: Take note of how the cable is routed through the frame. The cable is affixed to the frame with adhesive.
9. Lay the old and new printhead cable side by side. Copy the alignment mark from the old printhead cable to the same location on the new printhead cable.
10. Reassemble.

    Note: Route and connect the printhead cable at both ends before using the adhesive strip to affix the cable to the frame. Use the alignment mark to position the printhead cable.

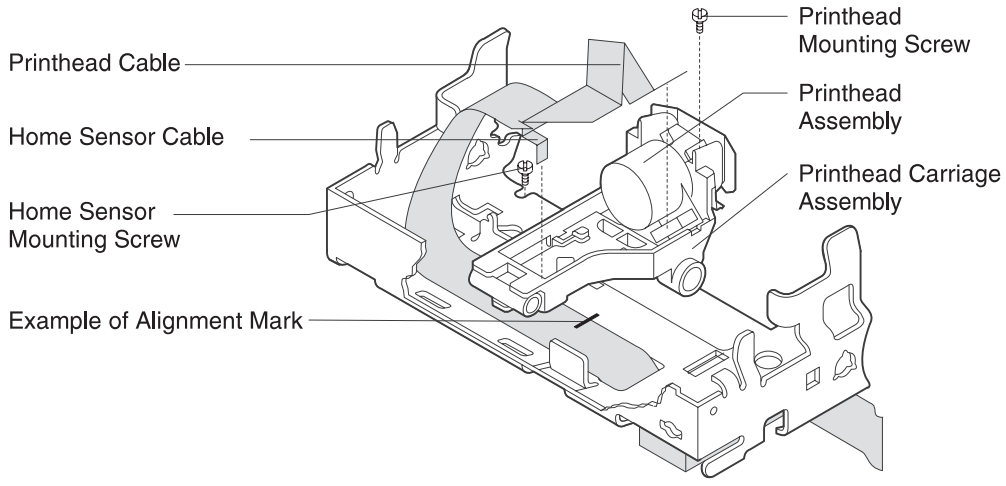

Figure 32. Disconnecting the Printhead Cable and Home Sensor

Removing and Replacing the Document Insert Sensor Assembly

Important

This procedure shows you how to remove the document insert assembly FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

Choose one of the following links to return to the procedure from which you came:

- "Removing and Replacing the DI Feed Roller" on page 71.
- "Removing and Replacing the Document Insert Backup Roller and Insert Lever Assembly" on page 68.

1. Remove the covers and the ribbon cartridge.
2. Disconnect the document sensor assembly cable (red five-pin connector) from the top of the main logic card.
3. Remove the sensor spring.
   - If the DI sensor will rotate forward past the carriage assembly, go to the next step.
   - If the DI sensor will not rotate forward past the carriage assembly, remove the pressure pad holder and wear plate to provide the required clearance. See Figure 35 on page 58.
4. Position the carriage assembly on the right side of the printer.
5. Pivot the **document insert sensor assembly** towards the front and pull it forward to remove.
6. Reassemble.
7. Perform the document threshold reset procedure. Go to "Document Sensor Threshold Reset" on page 117.
8. Run one of the 4610 diagnostic and adjustment utilities. See "Software Adjustments (Models TI1, TI2, TI3, TI4, TG3 and TG4)" on page 11.

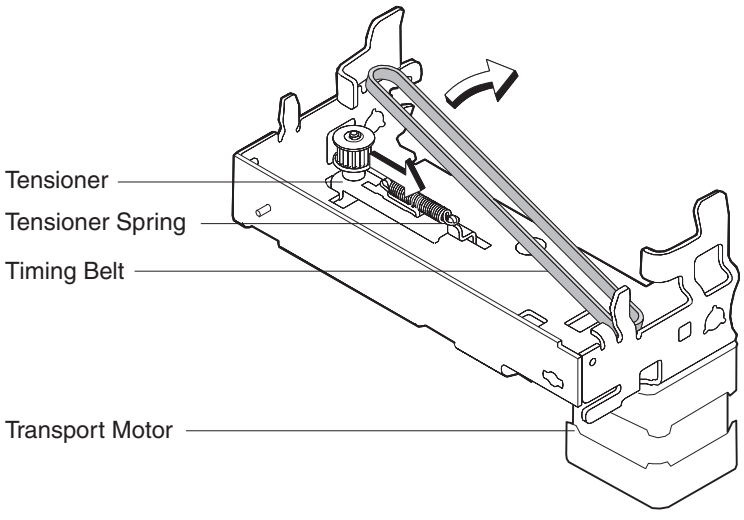

Figure 33. Removing the Timing Belt

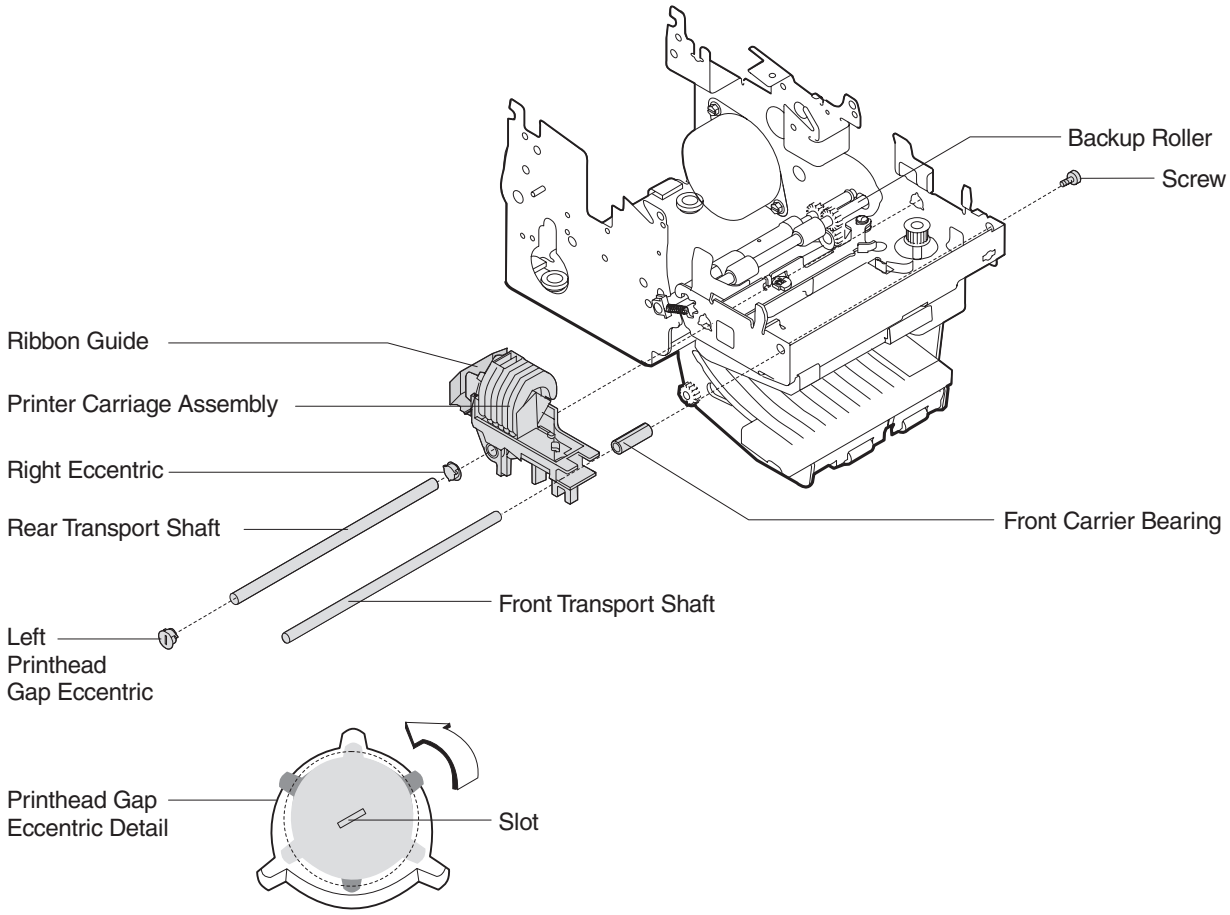

Figure 34. Removing the Front Transport Shaft

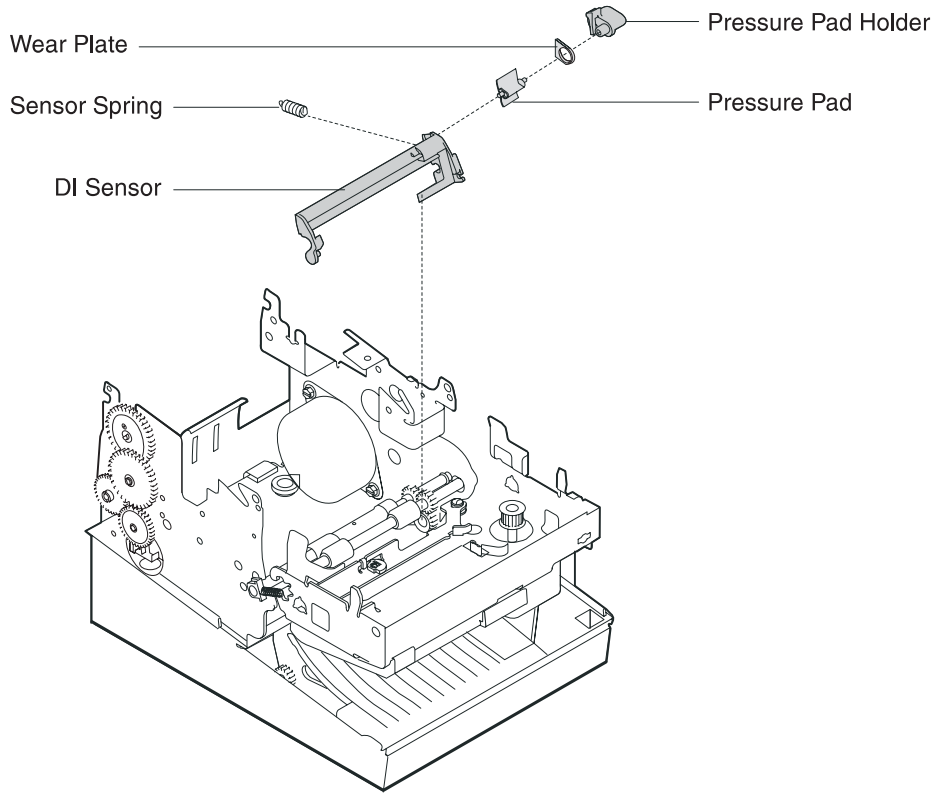

Figure 35. Disconnecting the Sensor Spring and Removing the DI Insert Assembly

updated October 30, 2001

Removing and Replacing the Document Insert Platen Assembly

Important

This procedure shows you how to remove the platen FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

Choose one of the following links to return to the procedure from which you came:

- "Removing and Replacing the MICR Read Head" on page 61.
- "Removing and Replacing the DI Feed Roller" on page 71.
- "Removing and Replacing the Cutter Gears and Cutter Clutch" on page 94.
- "Removing and Replacing the Customer Receipt Paper Guide" on page 96.

1. Remove the covers. Go to "Removing and Replacing the Top, Paper, and Ribbon Covers" on page 37.
2. Open the thermal printhead assembly up.
3. Disconnect the **clip springs** on both sides of the platen shaft. See Figure 36 on page 60.

   Note: The clip spring on the right side is installed reversed from the clip spring on the left side.
4. Disengage the **platen spring** and remove the **platen assembly** and the platen spring.
5. Reassemble.
6. Check the printhead gap. Go to "Printhead Platen Gap Adjustment" on page 108.

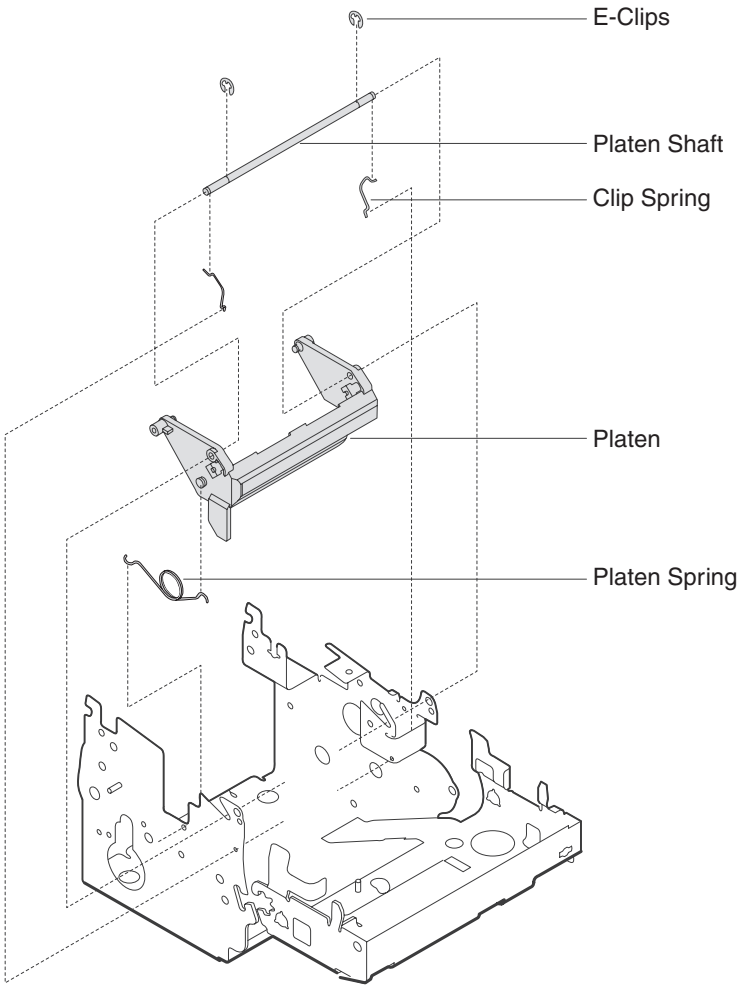

Figure 36. Removing the Document Insert Platen Assembly

updated October 30, 2001

Removing and Replacing the MICR Read Head

Important

This procedure shows you how to remove the MICR FRUs. Removing and Replacing the MICR Read Head. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

Use the following link to return to the procedure from which you came:

- "Removing and Replacing the DI Feed Roller" on page 71.

1. Remove the covers and the ribbon cartridge. Go to "Removing and Replacing the Top, Paper, and Ribbon Covers" on page 37.
2. Remove the front shock mount. See Figure 38 on page 62.
3. Disconnect the printhead cable from the logic card. Go to "Removing and Replacing the Printhead Cable" on page 55.
4. Lift the front of the printer frame high enough to reach in and disconnect the MICR reader cable.
5. Remove the document insert platen assembly. Go to "Removing and Replacing the Document Insert Platen Assembly" on page 59.
6. Remove the pressure pad holder, wear plate, and sensor spring. Go to "Removing and Replacing the Document Insert Sensor Assembly" on page 56.
7. Remove the screw holding the MICR to the lower form entry frame. See Figure 39 on page 63.
8. Move the printhead carrier to the full right position. Rotate the DI sensor toward the front of the printer.
9. Slide the **MICR** over towards the right side of the printer until it clears the mounting post, and remove it. Note the cable routing. See Figure 39 on page 63.
10. Reassemble.

    Note: Polarity of the connector is important. Do not force the connector.

11. Run one of the 4610 diagnostic and adjustment utilities. See "Software Adjustments (Models TI1, TI2, TI3, TI4, TG3 and TG4)" on page 11.

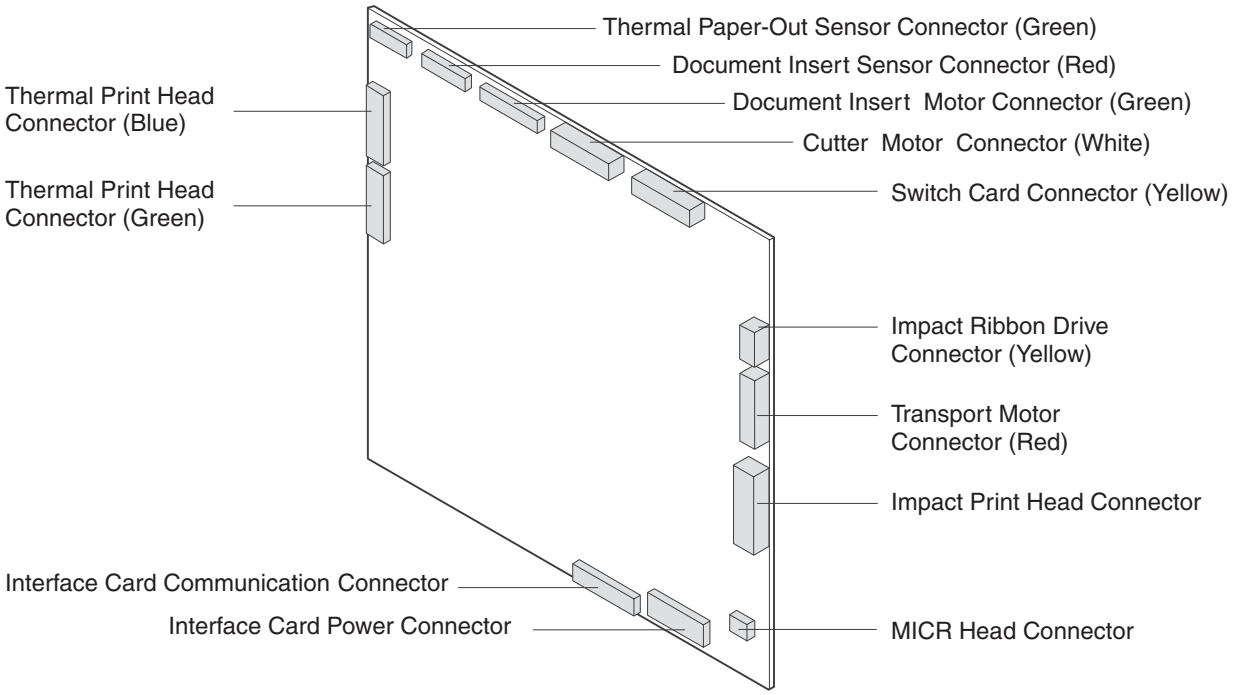
Thermal Paper-Out Sensor Connector (Green)
Document Insert Sensor Connector (Red)
Thermal Print Head Connector (Blue)
Document Insert Motor Connector (Green)
Cutter Motor Connector (White)
Thermal Print Head Connector (Green)
Switch Card Connector (Yellow)
Impact Ribbon Drive Connector (Yellow)
Transport Motor Connector (Red)
Impact Print Head Connector
Interface Card Communication Connector
Interface Card Power Connector
MICR Head Connector

Figure 37. Disconnecting the Main Logic Card Cables

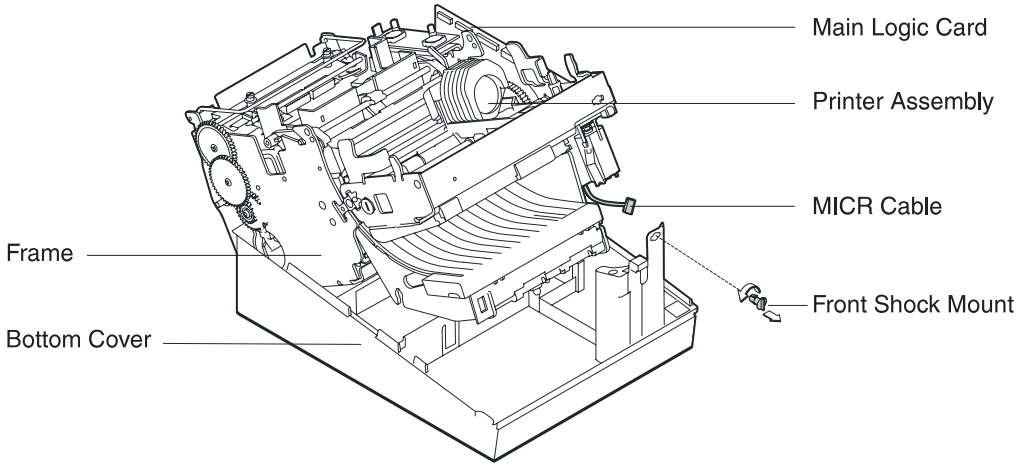

Figure 38. Removing the Front Shock Mount

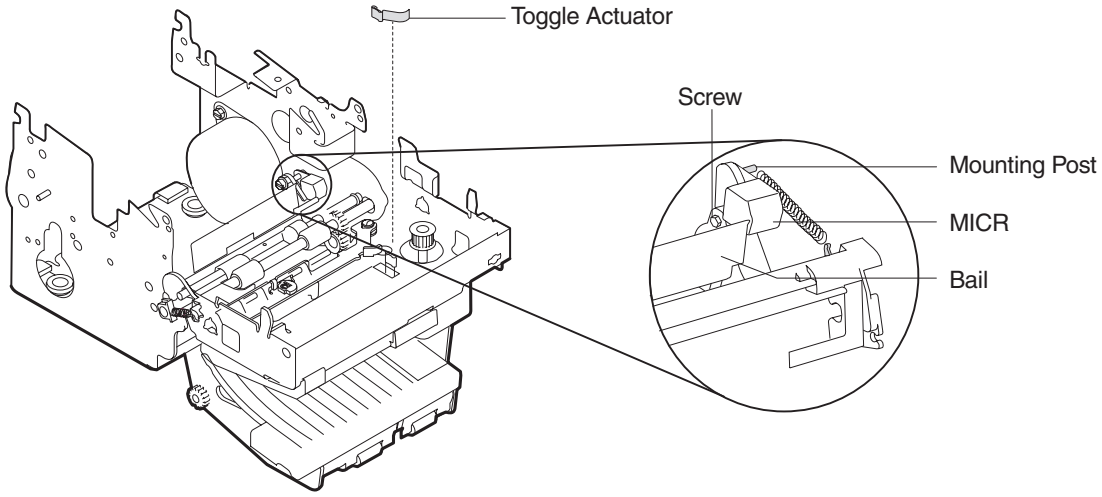

Figure 39. Removing the MICR

Removing and Replacing the Lower Forms Entry Frame or Flipper Assembly

Important

This procedure shows you how to remove the lower forms entry frame FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

1. Remove the covers. Go to “Removing and Replacing the Top, Paper, and Ribbon Covers” on page 37.
2. Gently remove the cables connected to the main logic card. Depending on the printer model, see Figure 40 on page 65 or Figure 41 on page 65.
3. Twist the front shock mount to the horizontal position and pull it out. SeeFigure 42 on page 66.
4. Lift the front of the printer frame high enough to reach in and disconnect the MICR reader cable.
5. If you need to replace the **upper DI forms entry**, do so at this point, instead of disconnecting the MICR cable. See Figure 43 on page 66.

   Note: Snaps for the upper DI forms entry are inside the frame under the front transport shaft. (See Figure 22 on page 43.)
6. Lift the frame out of the bottom cover.
7. Remove the document insert platen assembly. Go to “Removing and Replacing the Document Insert Platen Assembly” on page 59.
8. Remove the document insert sensor spring. Go to “Removing and Replacing the Document Insert Sensor Assembly” on page 56.
9. Go to “Removing and Replacing the MICR Read Head” on page 61 and follow steps 6 and 7 (Model TI2, TI4, and Model TG4 only).
10. Remove the E-clips from each side of the drive shaft. Slide and remove the drive shaft. See Figure 43 on page 66.
11. Remove the toggle actuator clip (Model TI2, TI4, and Model TG4 only). See Figure 43 on page 66.
12. Remove the **document insert lower forms entry frame** by maneuvering the bail through the DI backup roller and the feed roller and unsnapping the document insert sensor from the right side of the forms entry frame (Model TI1, TI3, and Model TG3 only). See Figure 43 on page 66.
13. Remove the **flipper assembly** by maneuvering the bail through the DI backup roller and the feed roller (Model TI2, TI4, and Model TG4 only). See Figure 44 on page 67.

    Note: It is important to note the position of the drive gear for reassembling. See Figure 45 on page 67.
14. Remove the **bail** from the document insert lower forms entry frame assembly. Press the bail downward in the center until the bail clears the locking posts and pull outward. See Figure 45 on page 67.
15. Reassemble.
16. Adjust the printhead gap. Go to “Printhead Platen Gap Adjustment” on page 108.

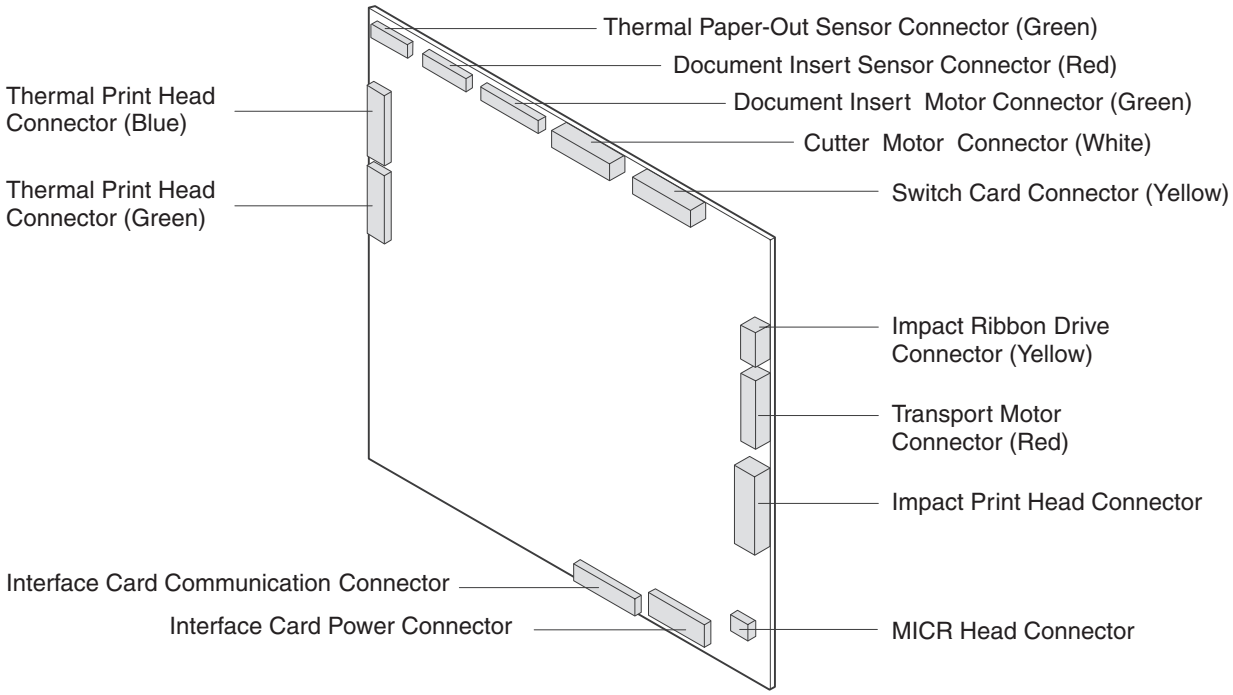
Thermal Paper-Out Sensor Connector (Green)
Document Insert Sensor Connector (Red)
Thermal Print Head Connector (Blue)
Document Insert Motor Connector (Green)
Cutter Motor Connector (White)
Thermal Print Head Connector (Green)
Switch Card Connector (Yellow)
Impact Ribbon Drive Connector (Yellow)
Transport Motor Connector (Red)
Impact Print Head Connector
Interface Card Communication Connector
Interface Card Power Connector
MICR Head Connector

Figure 40. Disconnecting the Main Logic Card Cables (Models TI1 and TI2)

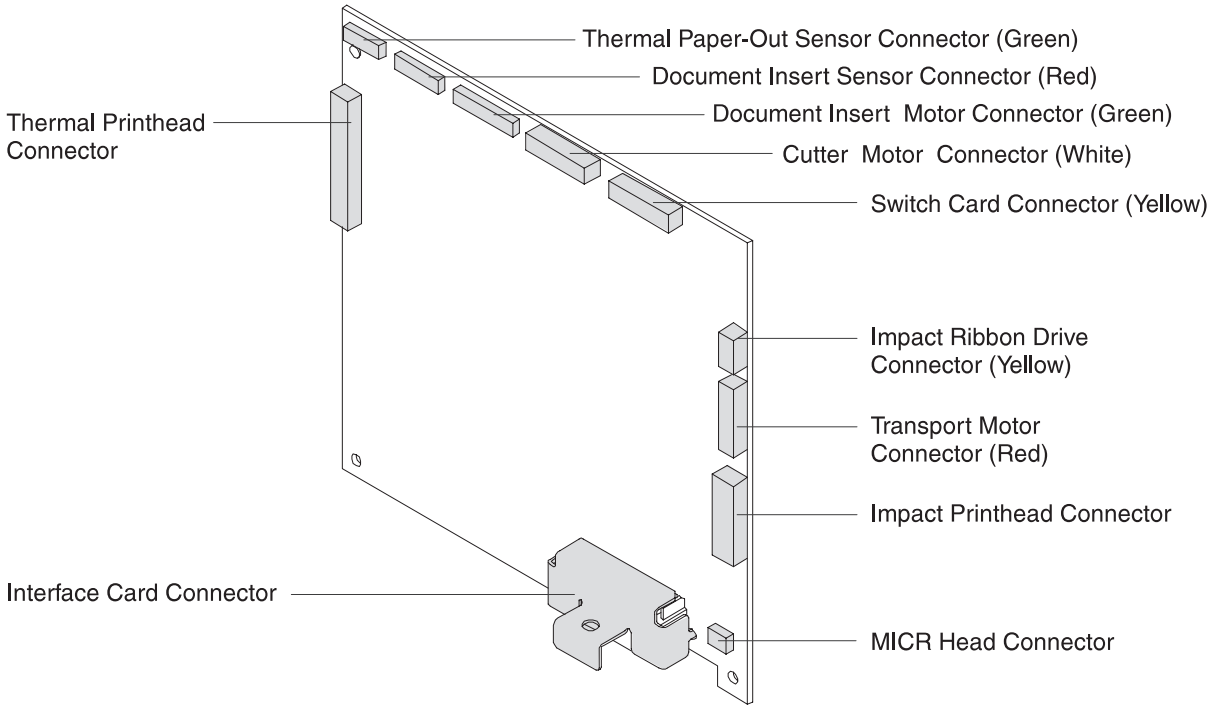
Thermal Paper-Out Sensor Connector (Green)
Document Insert Sensor Connector (Red)
Thermal Printhead Connector
Document Insert Motor Connector (Green)
Cutter Motor Connector (White)
Switch Card Connector (Yellow)
Impact Ribbon Drive Connector (Yellow)
Transport Motor Connector (Red)
Impact Printhead Connector
Interface Card Connector
MICR Head Connector

Figure 41. Disconnecting the Main Logic Card Cables (Models TI3, TI4, TG3, and TG4)

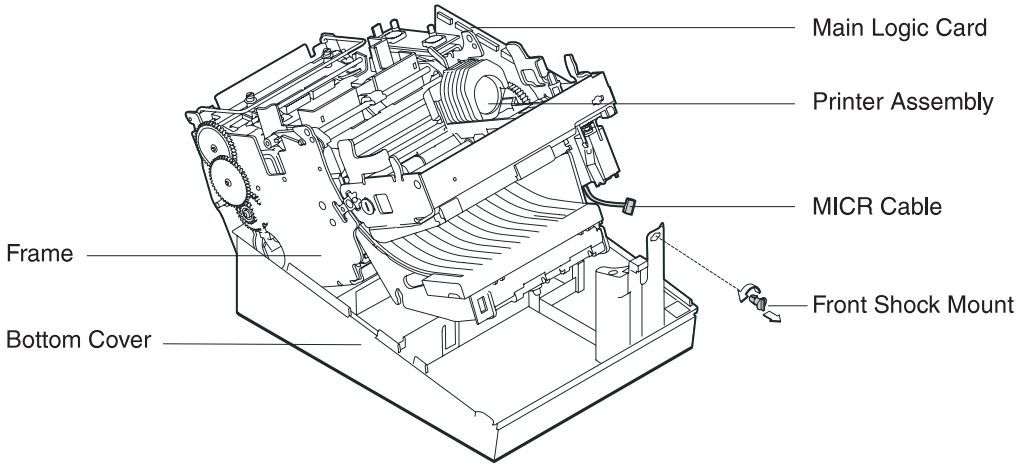

Figure 42. Disconnecting the MICR Cable

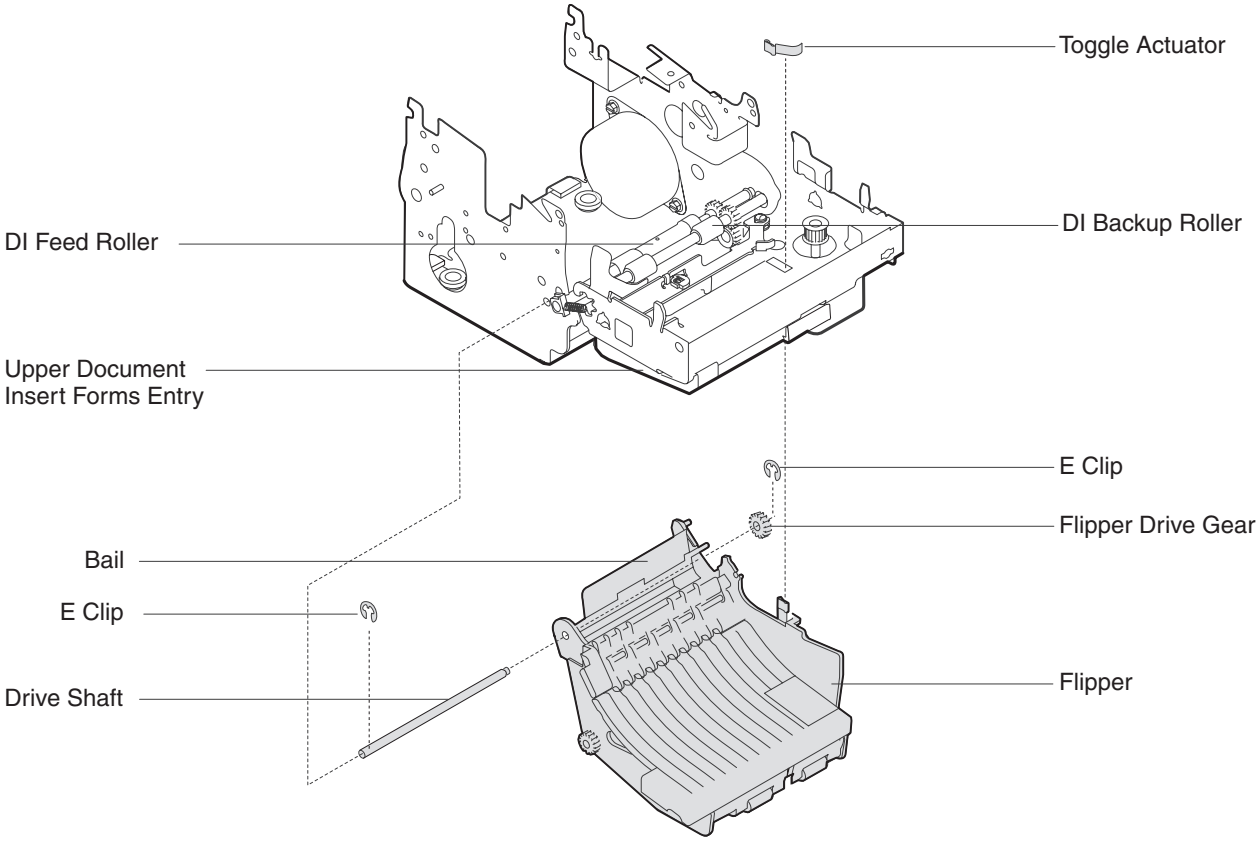

Figure 43. Removing the Lower Forms Entry Frame

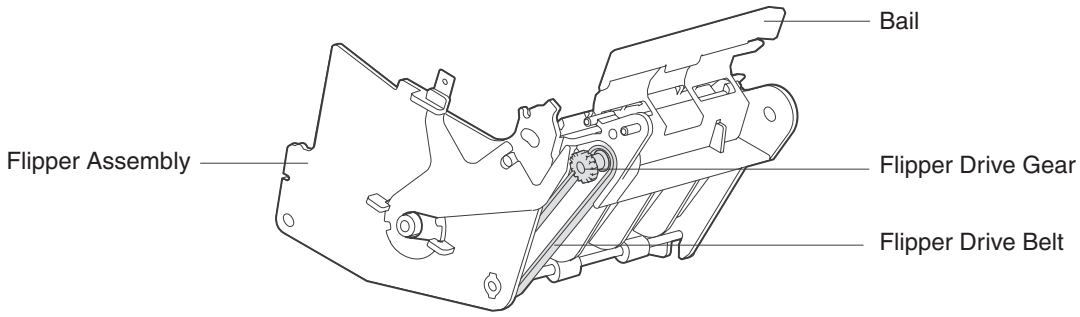

Figure 44. Removing the Flipper Assembly

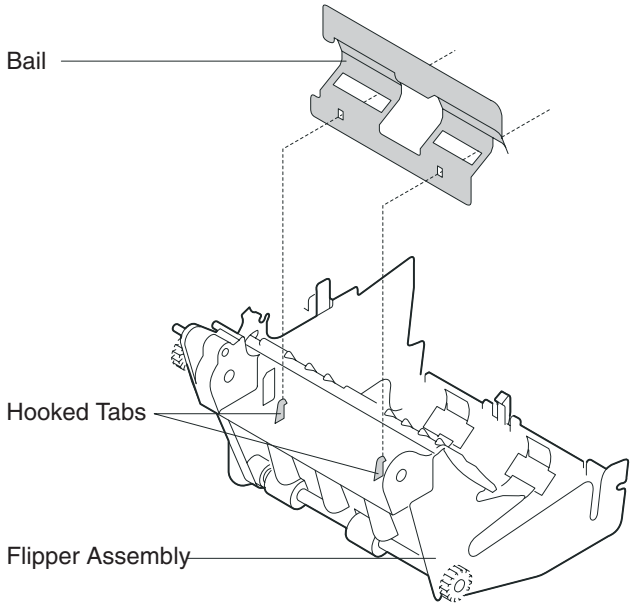

Figure 45. Removing the Bail

Removing and Replacing the Document Insert Backup Roller and Insert Lever Assembly

Important

This procedure shows you how to remove the document insert backup roller FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

1. Remove the document insert sensor assembly. Go to “Removing and Replacing the Document Insert Sensor Assembly” on page 56.
2. Remove the pressure spring between the frame and shaft eccentric bearing. See Figure 46 on page 69.
3. Remove the E-clip from the document insert backup roller.
4. Slide the **document insert backup roller** to the left side and pull forward to remove.

   Note: Be careful not to misplace the bushing on the right-side.
5. Remove the rear transport shaft.
6. Remove the E-clip from the document insert lever assembly. See Figure 47 on page 70.
7. Remove the **document insert lever assembly**.
8. Reassemble.
9. Reset the pressure shaft eccentric bushing. Go to “DI Forms Compensation Adjustment” on page 106.
10. Reset the DI open lever adjustment. Go to “DI Open Lever Adjustment” on page 110.
11. Adjust the printhead gap. Go to “Printhead Platen Gap Adjustment” on page 108.
12. Run one of the 4610 diagnostic and adjustment utilities. See “Software Adjustments (Models TI1, TI2, TI3, TI4, TG3 and TG4)” on page 11.

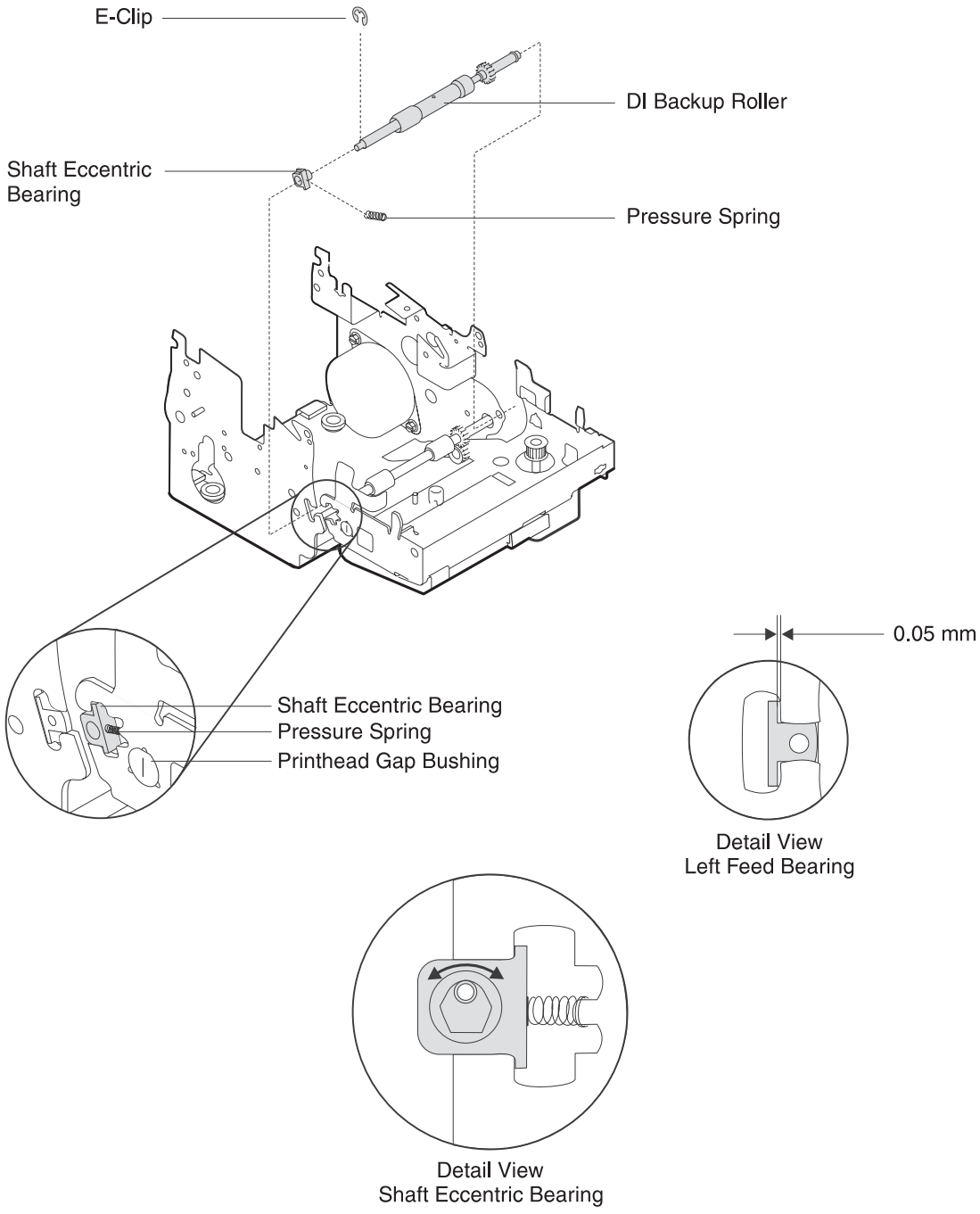

Figure 46. Removing the DI Backup Roller

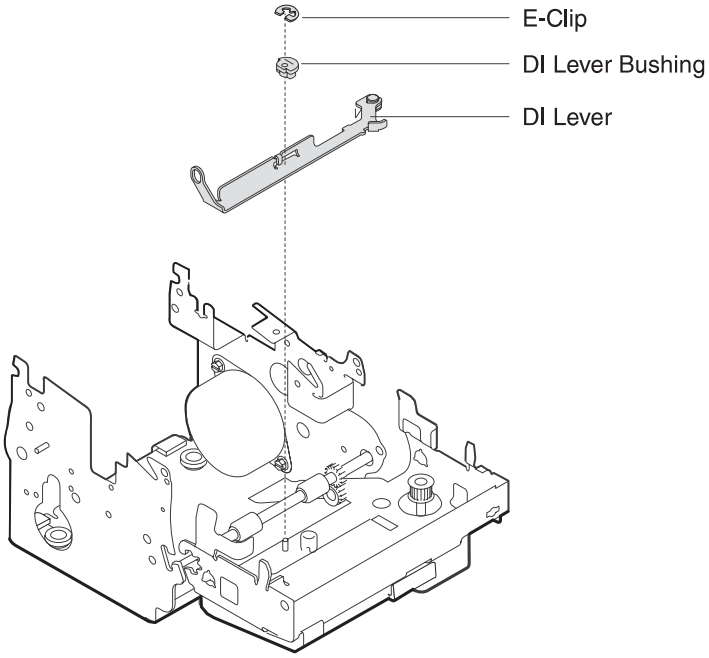

Figure 47. Removing the DI Lever Assembly

updated October 30, 2001

Removing and Replacing the DI Feed Roller

Important

This procedure shows you how to remove the DI feed roller FRU. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

1. **Power OFF** the printer by either powering off the system or unplugging the external power source from the wall outlet.
2. Remove the covers. Go to “Removing and Replacing the Top, Paper, and Ribbon Covers” on page 37.
3. Remove the ribbon.
4. Gently remove the cables connected to the main logic card. See Figure 48 on page 72.
5. Twist the front shock mount to the horizontal position and pull it out. See Figure 50 on page 73.
6. Lift the front of the printer frame high enough to reach in and disconnect the MICR reader cable.
7. Remove the document insert platen assembly. Go to “Removing and Replacing the Document Insert Platen Assembly” on page 59.
8. Remove the document insert sensor assembly. Go to “Removing and Replacing the Document Insert Sensor Assembly” on page 56.
9. Remove the MICR read head. Go to “Removing and Replacing the MICR Read Head” on page 61 and follow steps 7 and 8.
10. Follow steps 10 through 13 for “Removing and Replacing the Lower Forms Entry Frame or Flipper Assembly” on page 64.
11. Remove the document insert backup roller. Go to “Removing and Replacing the Document Insert Backup Roller and Insert Lever Assembly” on page 68.
12. Remove the **DI gear**. See Figure 51 on page 73.
13. Remove the E-clip from the left side of the document insert feed roller. See Figure 52 on page 74.
14. Move the left feed bearing to the right side enough to clear it from the frame. Pull forward and remove the left end of the feed roller.
15. Align the retention pin on the right side of the feed roller with the opening in the frame and remove the **feed roller**.
16. Reassemble.
17. Adjust the printhead gap. Go to “Printhead Platen Gap Adjustment” on page 108.
18. Run one of the 4610 diagnostic and adjustment utilities. See “Software Adjustments (Models TI1, TI2, TI3, TI4, TG3 and TG4)” on page 11.

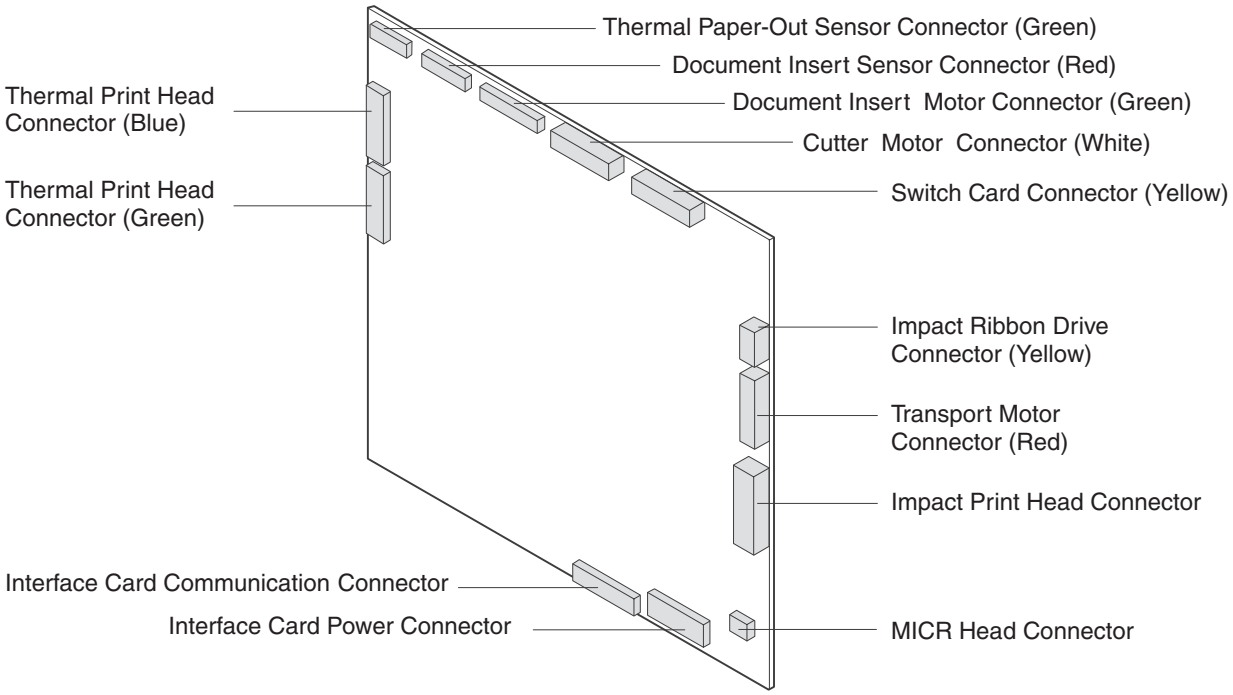
Thermal Paper-Out Sensor Connector (Green)
Document Insert Sensor Connector (Red)
Thermal Print Head Connector (Blue)
Document Insert Motor Connector (Green)
Cutter Motor Connector (White)
Thermal Print Head Connector (Green)
Switch Card Connector (Yellow)
Impact Ribbon Drive Connector (Yellow)
Transport Motor Connector (Red)
Impact Print Head Connector
Interface Card Communication Connector
Interface Card Power Connector
MICR Head Connector

Figure 48. Disconnecting the Main Logic Card Cables (Models TI1 and TI2)

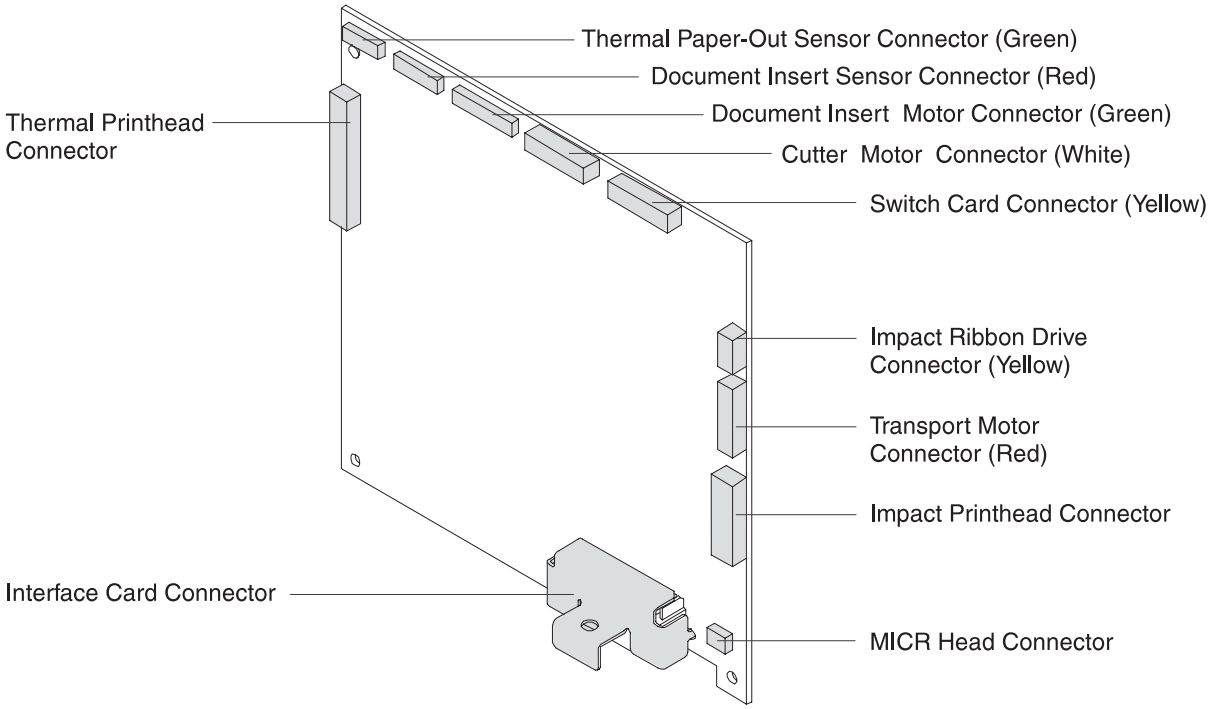
Thermal Paper-Out Sensor Connector (Green)
Document Insert Sensor Connector (Red)
Thermal Printhead Connector
Document Insert Motor Connector (Green)
Cutter Motor Connector (White)
Switch Card Connector (Yellow)
Impact Ribbon Drive Connector (Yellow)
Transport Motor Connector (Red)
Impact Printhead Connector
Interface Card Connector
MICR Head Connector

Figure 49. Disconnecting the Main Logic Card Cables (Models TI3 TI4, TG3, and TG4)

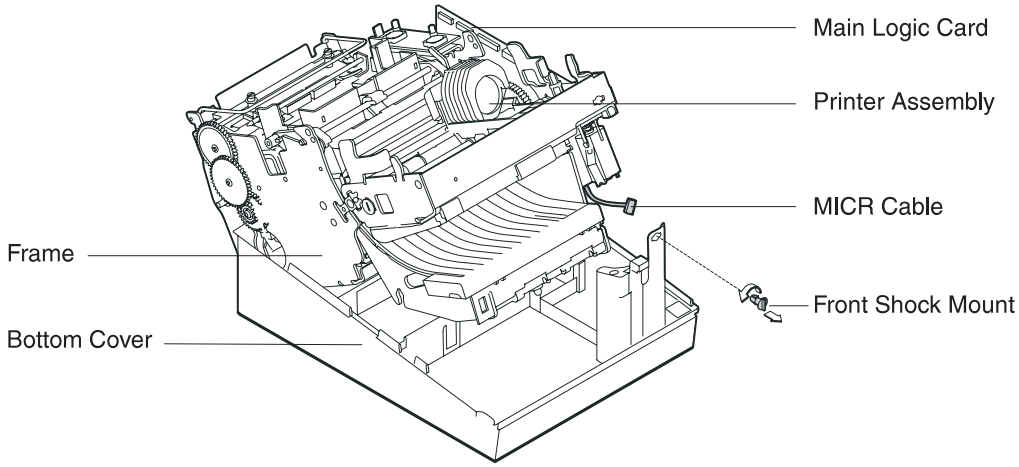

Figure 50. Removing the Front Shock Mount and Disconnecting the MICR Cable

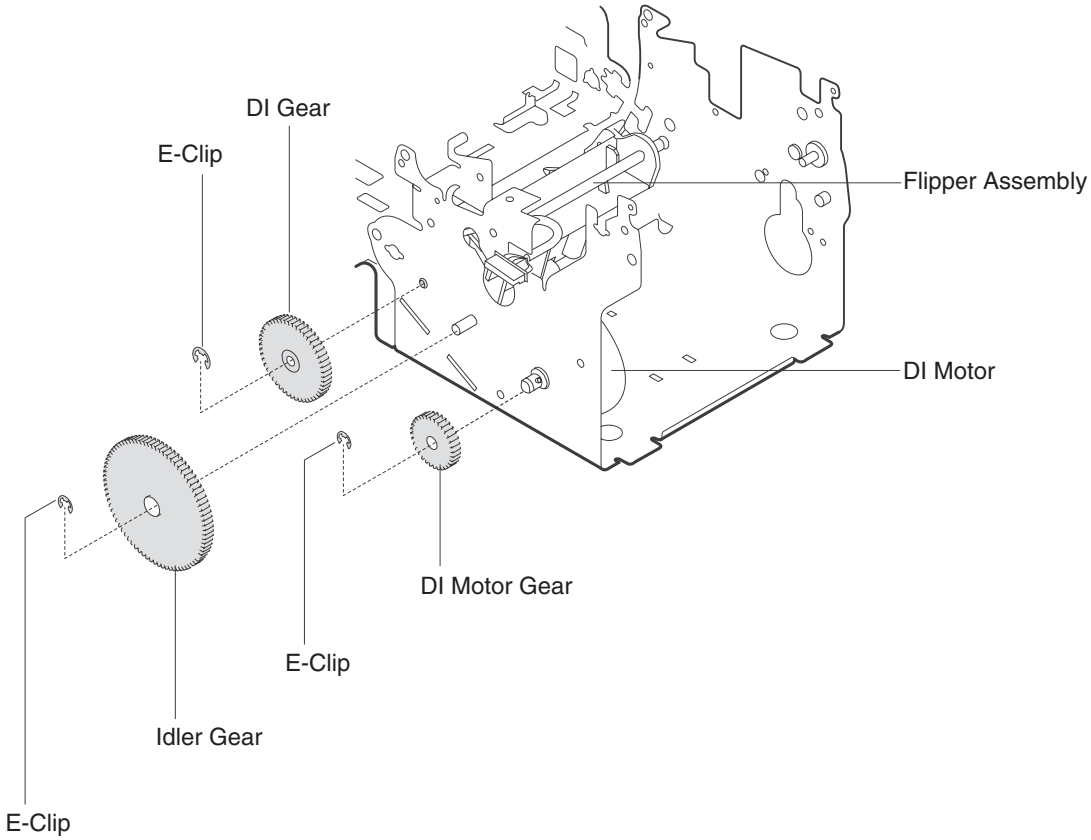

Figure 51. Gear Removal

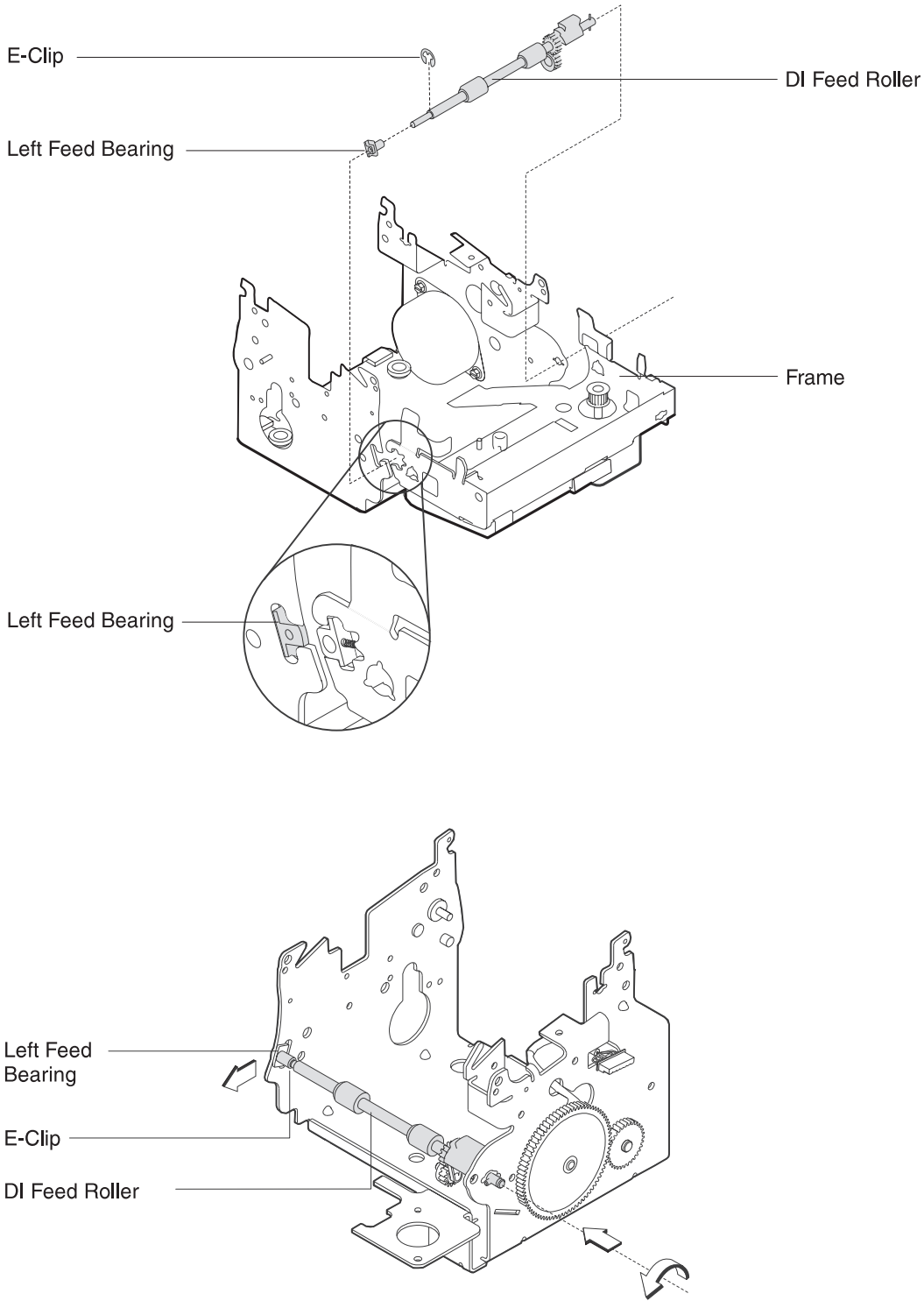

Figure 52. Removing the Document Insert Feed Roller

Removing and Replacing the Switch Card and Printhead Spacer

Important

This procedure shows you how to remove the switch card and printhead spacer. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

Use the following link to return to the procedure from which you came:

- "Removing and Replacing the Ribbon Drive Assembly" on page 45.

1. Remove the covers. Go to "Removing and Replacing the Top, Paper, and Ribbon Covers" on page 37.
2. Disconnect the switch card cable from the main logic card.
3. Unfasten the screw and remove the **switch card**. See Figure 53.
4. Remove the **printhead spacer** from the frame.
5. Reassemble.

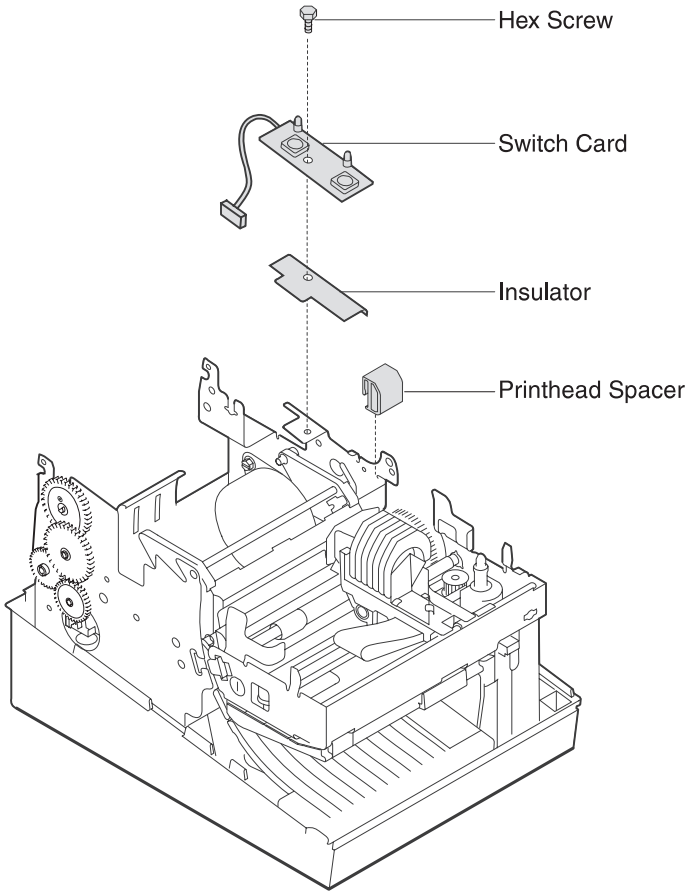

Figure 53. Removing the Switch Card and Printhead Spacer

Removing and Replacing the Main Logic Card and Cable-Attached Interface Card (Models TI1 and TI2)

Note: The interface card attaches to the logic card through either a connector or cables. See “Removing and Replacing the Main Logic Card and Connector-Attached Interface Card (Models TI3, TI4, TG3, and TG4)” on page 79 if you are repairing a connector-attached card (Model TI3 or Model TI4).

Important

This procedure shows you how to remove the logic FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

1. Remove the covers. Go to “Removing and Replacing the Top, Paper, and Ribbon Covers” on page 37.
2. Gently remove the cables connected to the main logic card. Depending on the printer model, see Figure 54 on page 77 or Figure 55 on page 77.
3. Twist the front shock mount to the horizontal position and pull it out. See Figure 56 on page 78.
4. Lift the front of the printer frame high enough to reach in and disconnect the MICR reader cable.
5. Lift the frame out of the bottom cover.
6. Remove the two screws from the logic card. See Figure 57 on page 78.
7. Pull the EMC shield back from the logic card.
8. Slightly lift the logic card up enough to disconnect the signal and power cables and remove the **main logic card**. See Figure 57 on page 78.

   Note: The switches on the new card need to be set the same as the old card that you are exchanging.
9. Pull the locking tab away from the interface card. Lift and rotate the interface card to clear the locking tab. Lift the shield and **interface card** up and out. See Figure 57 on page 78.
10. Remove the **EMC shield clamp**. Open the EMC shield flaps. See Figure 57 on page 78.
11. Remove the **signal cable and power cable** from the interface card.
12. Unfasten the two screws holding the EMC shield to the interface card.
13. Unfasten the two screws attaching the EMC shield to the RS-232 connector on the back of the interface card.
14. Remove the **interface card**.
15. Remove the **EMC shield**.
16. Reassemble.
17. Whenever you exchange the main logic card, you must configure the printer model and then update the firmware. Make a note of the printer model and serial number, which are located on the label that is either on or under the front cover of the printer, then go to “Software Adjustments (Models TI1, TI2, TI3, TI4, TG3 and TG4)” on page 11.

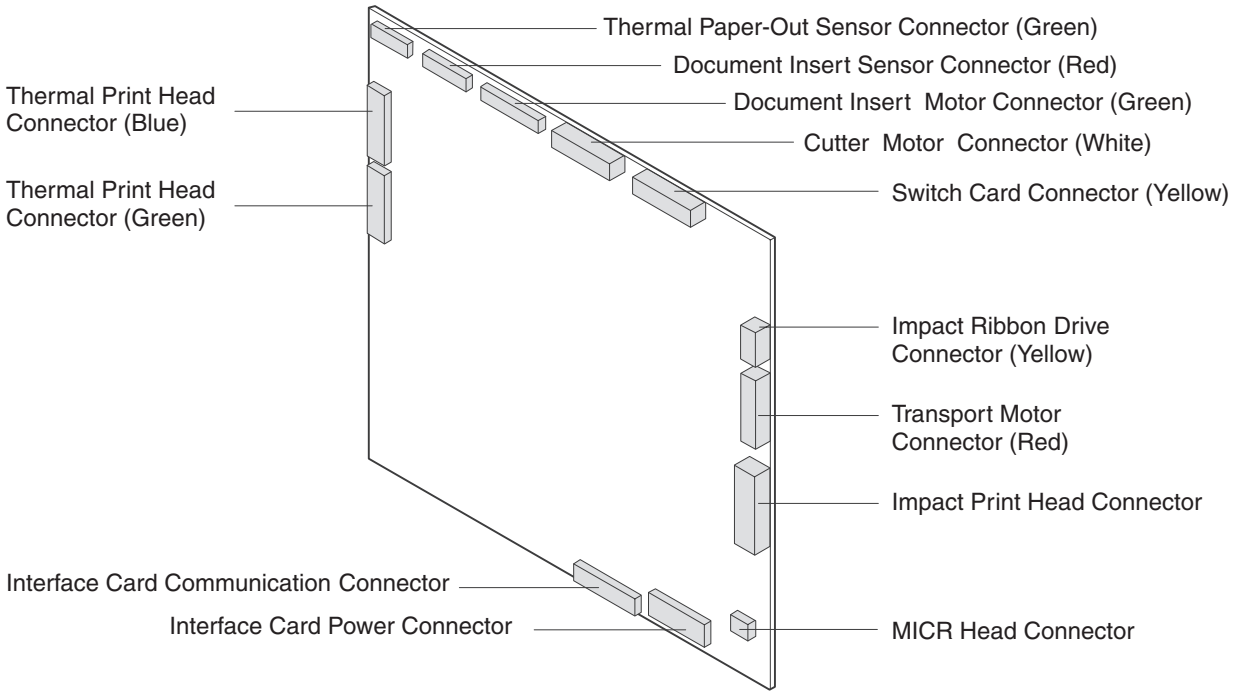
Thermal Paper-Out Sensor Connector (Green)
Document Insert Sensor Connector (Red)
Thermal Print Head Connector (Blue)
Document Insert Motor Connector (Green)
Cutter Motor Connector (White)
Thermal Print Head Connector (Green)
Switch Card Connector (Yellow)
Impact Ribbon Drive Connector (Yellow)
Transport Motor Connector (Red)
Impact Print Head Connector
Interface Card Communication Connector
Interface Card Power Connector
MICR Head Connector

Figure 54. Disconnecting the Main Logic Card Cables (Models TI1 and TI2)

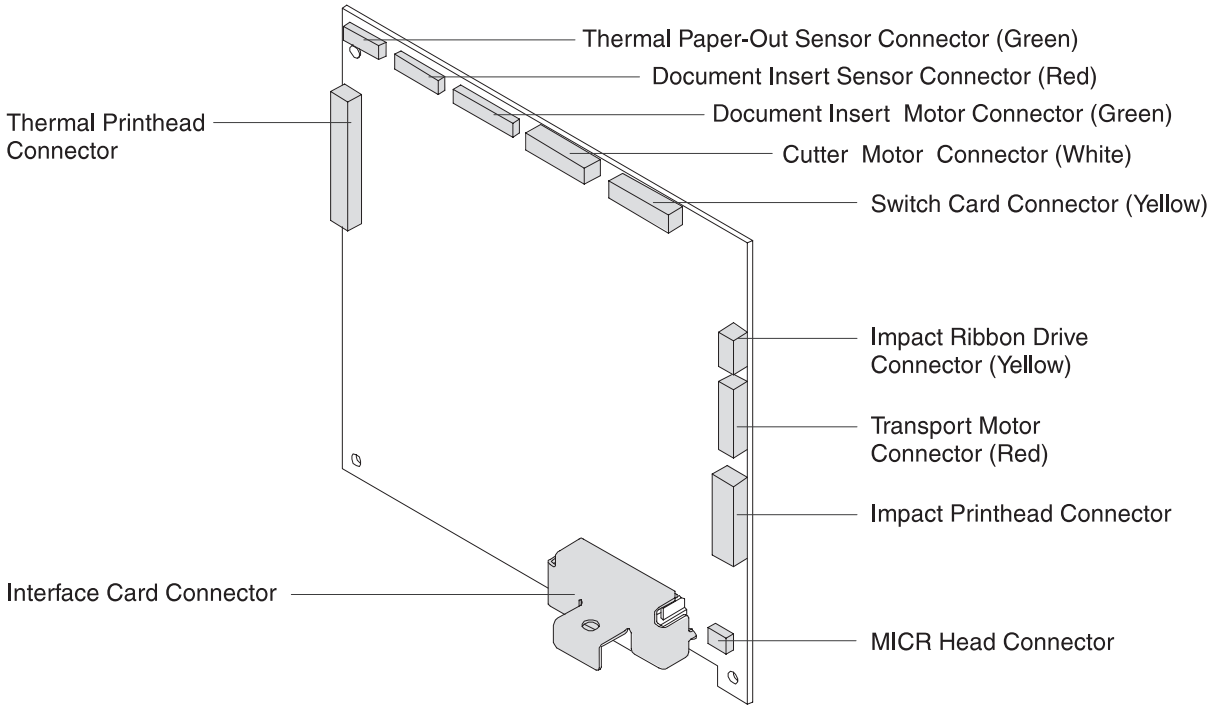
Thermal Paper-Out Sensor Connector (Green)
Document Insert Sensor Connector (Red)
Thermal Printhead Connector
Document Insert Motor Connector (Green)
Cutter Motor Connector (White)
Switch Card Connector (Yellow)
Impact Ribbon Drive Connector (Yellow)
Transport Motor Connector (Red)
Impact Printhead Connector
Interface Card Connector
MICR Head Connector

Figure 55. Disconnecting the Main Logic Card Cables (Models TI3, TI4, TG3, and TG4)

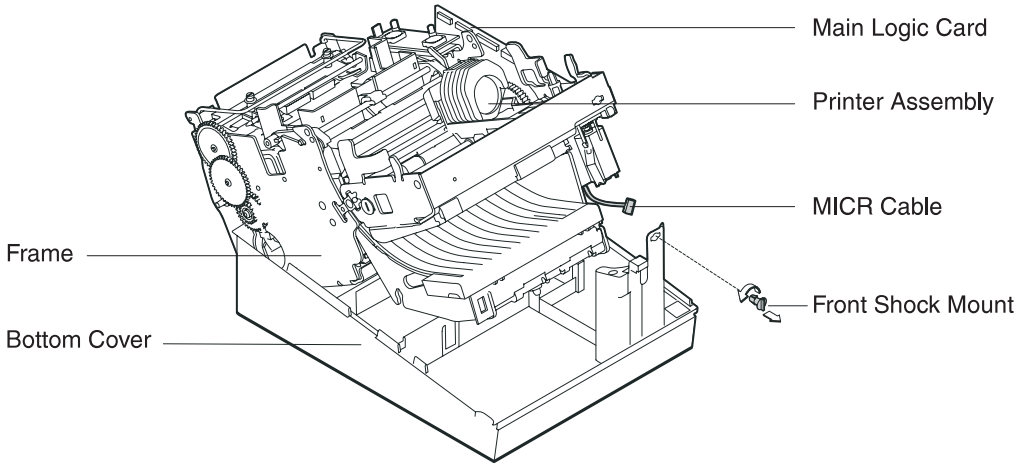

Figure 56. Removing the Front Shock Mount and Disconnecting the MICR Cable

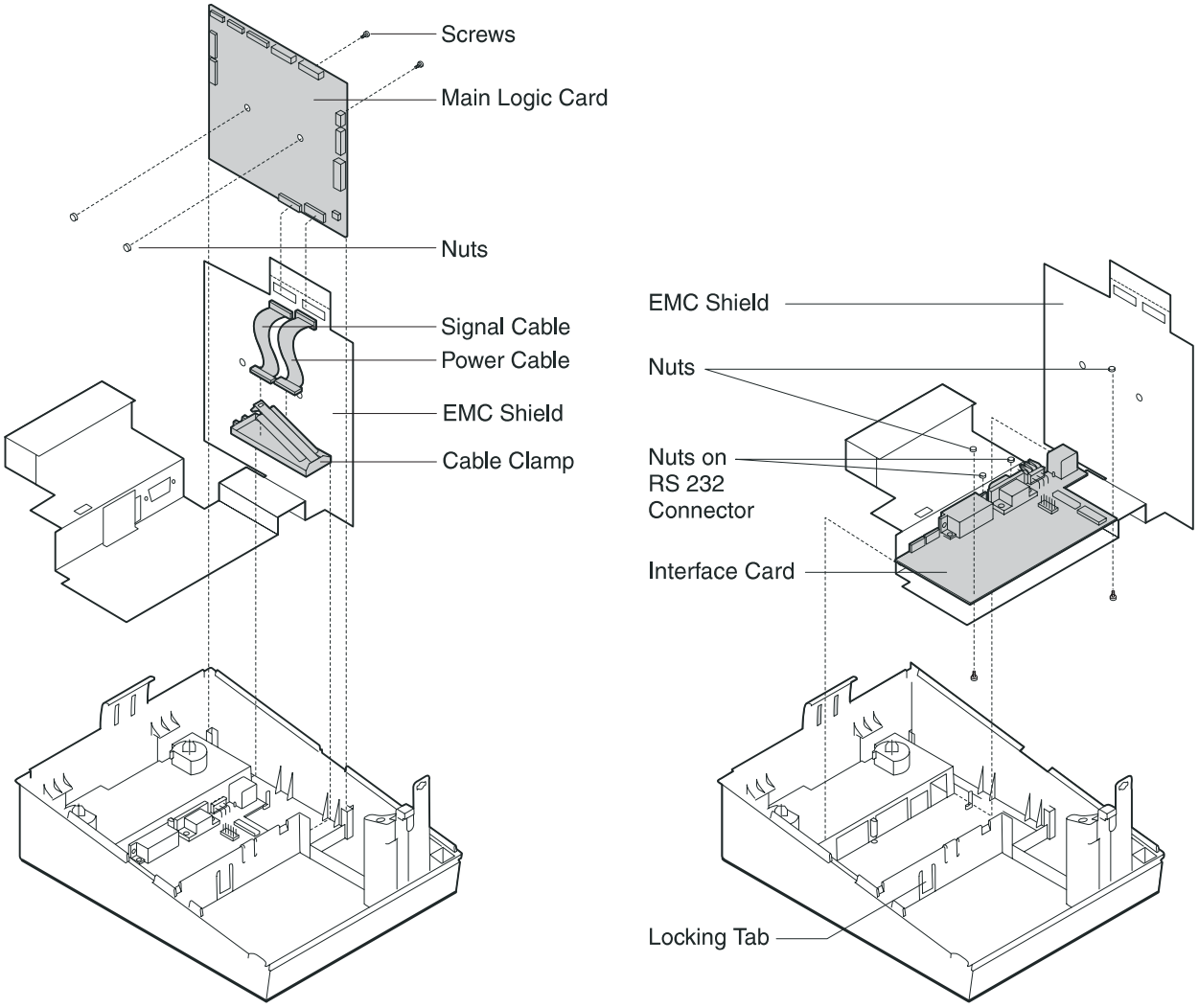

Figure 57. Removing the Logic Card and the Interface Card

updated October 30, 2001

Removing and Replacing the Main Logic Card and Connector-Attached Interface Card (Models TI3, TI4, TG3, and TG4)

Note: The interface card attaches to the logic card through either a connector or cables. See “Removing and Replacing the Main Logic Card and Cable-Attached Interface Card (Models TI1 and TI2)” on page 76 if you are repairing a cable-attached card.

Important

This procedure shows you how to remove the logic FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

1. Invert the fully assembled printer.
2. Turn the screw that is fastened to the **interface card assembly** counterclockwise until it is loose.
3. Pull down on the **interface card assembly** at the end nearest to the screw.
4. Slide the **interface card assembly** out of the bottom cover.
5. Remove the top cover. Go to “Removing and Replacing the Top, Paper, and Ribbon Covers” on page 37.
6. Remove all cables from the main logic card.
7. Lift the **main logic card** out of the bottom cover.
8. Reassemble.
9. Whenever you exchange the main logic card, you must configure the printer model and then update the firmware. Make a note of the printer model and serial number, which are located on the label that is either on or under the front cover of the printer, then go to “Software Adjustments (Models TI1, TI2, TI3, TI4, TG3 and TG4)” on page 11.

Note: After replacing the SureMark planar in a SureMark Model TI3 DI-Less RPQ printer, you must run the 4610 Set MCT Tool Diskette. To download and run the utility:

1. Visit the IBM Retail Store Solutions Web site at
   `http://www.ibm.com/solutions/retail/store`
2. Select **Support** on the left edge of the main page.
3. Select the SureMark Printer.
4. Under Downloads, select the Configure MCT Utility Diskette (4610MCT.EXE).
5. Make a diskette from the diskette image that was downloaded.
6. Attach the SureMark to a PC, 469x system RS-485 port #7, or 469x RS-232 port COM1.
7. Boot the diskette and follow the menus to set the SureMark MCT values to enable the SureMark for DI-Less operation.

Note: Before replacing the main logic card, verify that you have the correct card associated with your model:

SureMark Part Number	Corresponding Card Number
TI3 - 08L1853 (RS232 & RS485 interface) / 30L6414 (USB interface)	30L6446
TG3 - 08L1853 (RS232 & RS485 interface) / 30L6414 (USB interface)	30L6446
TI4 - 08L1854 (RS232 & RS485 interface) / 30L6415 (USB interface)	30L6446
TG4 - 10J1551 (RS232 & RS485 interface)	30L6446
10J0393 (Model TI3 with 2 MB card option) / 10J0654 (USB model)	10J0152
10J0392 (Model TI4 with 2 MB card option) / 10J0656 (USB model)	10J0152

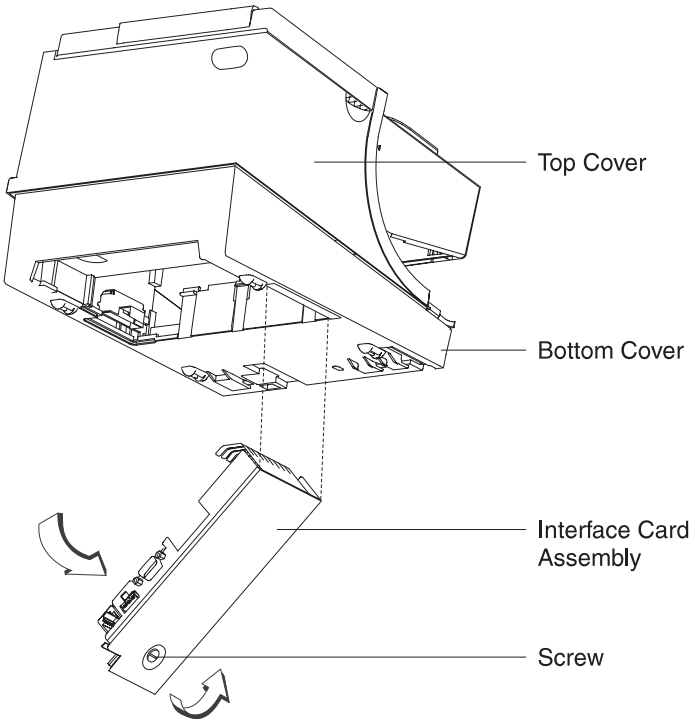

Figure 58. Removing the Interface Card Assembly

SureMark Model	Printer P/N	Corresponding Card P/N
TI3 - 512Kb memory	05L1853, 30L6414	30L6446
TG3 - 512Kb memory	10J1541	30L6446
TI4 - 512 Kb memory	08L1854, 30L6415	30L6446
TG4 - 512 Kb memory	10J1551	30L6446
TI3 - 2 Mb memory	10J0393, 10J0654	10J0152
TI4 - 2 Mb memory	10J0392, 10J0656	10J0152

Removing and Replacing the Thermal Cables and Paper Switch

Important

This procedure shows you how to remove the thermal cover, thermal cables, and the thermal paper switch FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

1. Remove the covers. Go to “Removing and Replacing the Top, Paper, and Ribbon Covers” on page 37.
2. Remove the **thermal cover**. See Figure 59.
3. Remove the tie wraps and spiral wraps from the thermal printhead cables. Take note of the cable and spiral wrap locations. See Figure 60 on page 82.
4. For Models TI1 and TI2, disconnect both cables from the main logic unit and from the thermal printhead. See Figure 61 on page 82.

   For Models TI3, TI4, TG3, and TG4, disconnect the cable from the main logic card and from the thermal printhead. See Figure 62 on page 83.
5. Remove the **thermal cables**.
6. Unfasten the screw and remove the **thermal paper switch**.
7. Reassemble.
8. Check thermal paper switch operation and adjust as necessary. Go to “Thermal Paper Switch Adjustment” on page 116.

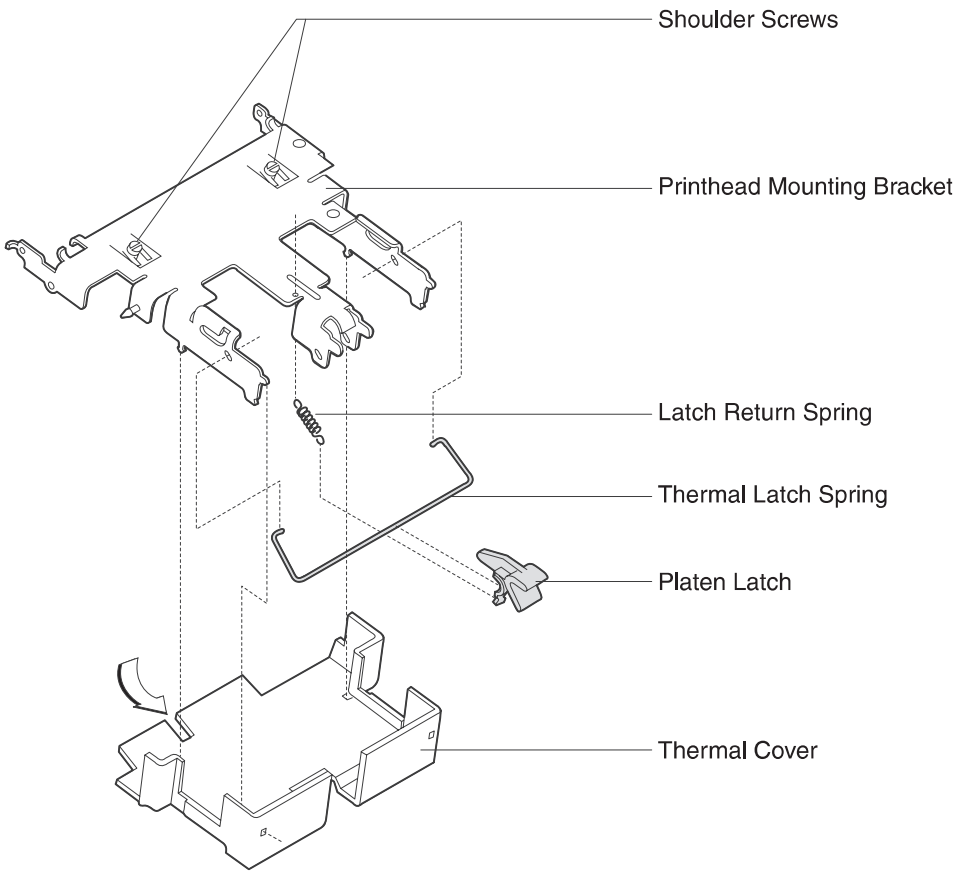

Figure 59. Removing the Thermal Cover

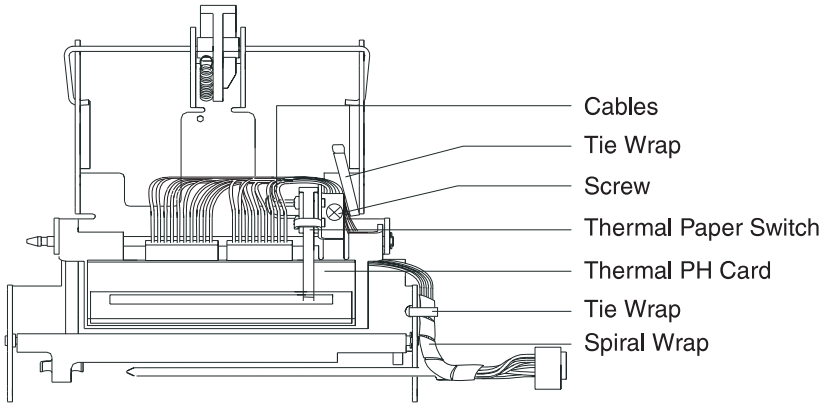

Figure 60. Removing the Spiral Wraps

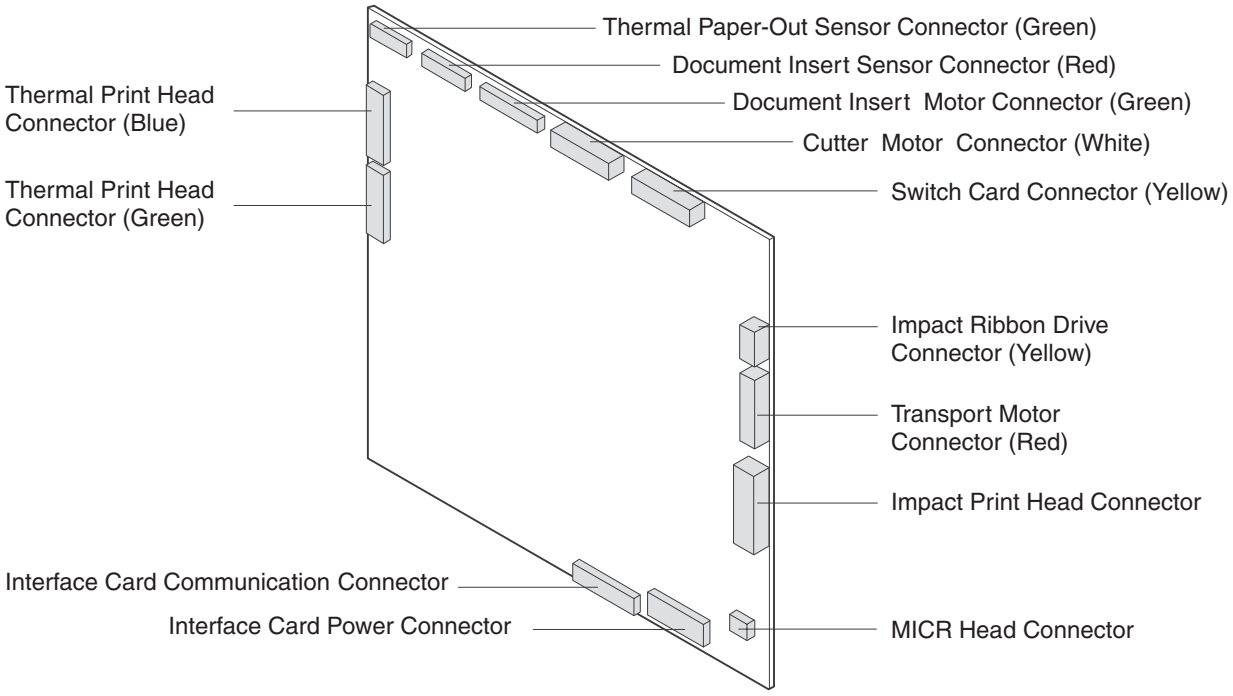
Thermal Paper-Out Sensor Connector (Green)
Document Insert Sensor Connector (Red)
Thermal Print Head Connector (Blue)
Document Insert Motor Connector (Green)
Cutter Motor Connector (White)
Thermal Print Head Connector (Green)
Switch Card Connector (Yellow)
Impact Ribbon Drive Connector (Yellow)
Transport Motor Connector (Red)
Impact Print Head Connector
Interface Card Communication Connector
Interface Card Power Connector
MICR Head Connector

Figure 61. Disconnecting the Thermal Cables from the Main Logic Card (Models TI1 and TI2)

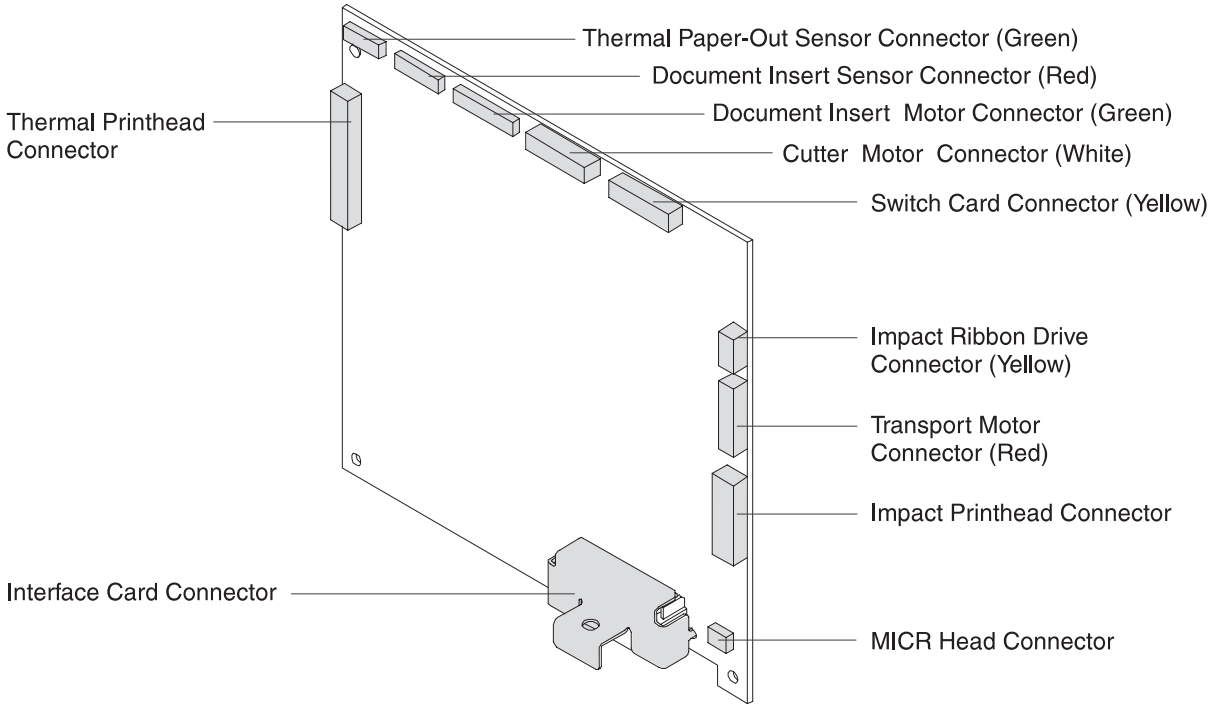
Thermal Paper-Out Sensor Connector (Green)
Document Insert Sensor Connector (Red)
Thermal Printhead Connector
Document Insert Motor Connector (Green)
Cutter Motor Connector (White)
Switch Card Connector (Yellow)
Impact Ribbon Drive Connector (Yellow)
Transport Motor Connector (Red)
Impact Printhead Connector
Interface Card Connector
MICR Head Connector

Figure 62. Disconnecting the Thermal Cable from the Main Logic Card (Models TI3, TI4, TG3, and TG4)

Removing and Replacing the Thermal Latch

Important

This procedure shows you how to remove the thermal latch FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

1. Remove the paper cover. Go to “Removing and Replacing the Top, Paper, and Ribbon Covers” on page 37.
2. Remove the thermal cover, see Figure 63.
3. Remove the latch return spring from the platen latch.
4. Push outward on the platen latch and remove. See Figure 63.
5. Pull locking tabs on both sides of the latch spring outward from the printhead mounting bracket.
6. Slide the **thermal latch spring** to one side and remove it. See Figure 64 on page 85.
7. Reassemble.

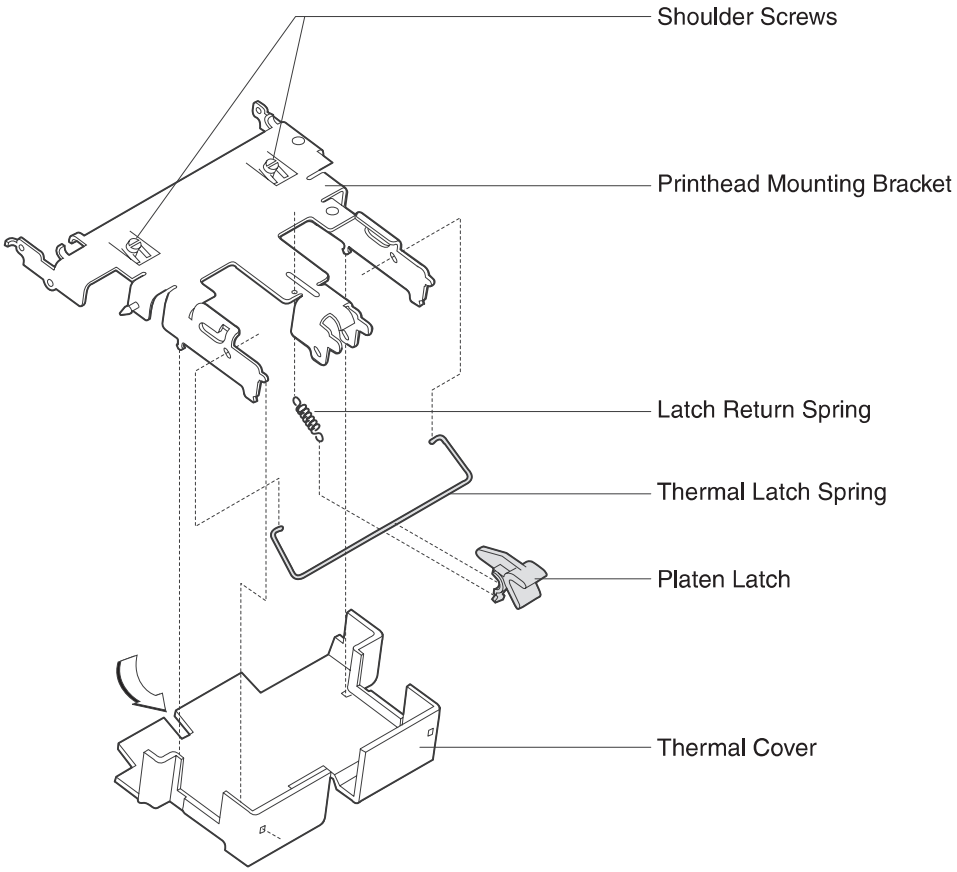

Figure 63. Thermal Latch Assembly

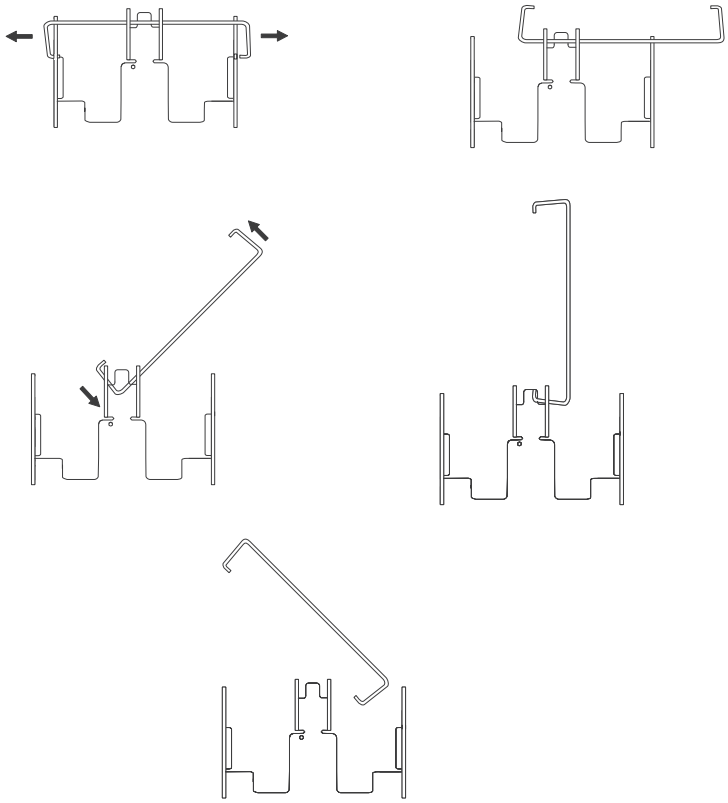

Figure 64. Removing the Thermal Latch Spring

Removing and Replacing the Thermal Drag Strip

Important

This procedure shows you how to remove the thermal drag strip FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

1. Remove the paper cover. Go to “Removing and Replacing the Top, Paper, and Ribbon Covers” on page 37.
2. Remove the E-clip and disconnect the drag strip from the printhead shaft. See Figure 66 on page 87.
3. Remove the **drag strip** by pulling it through the drag shaft housing. Take note of the orientation for reassembling.
4. Reassemble. You must flex the tip of the drag strip to get it back into position.

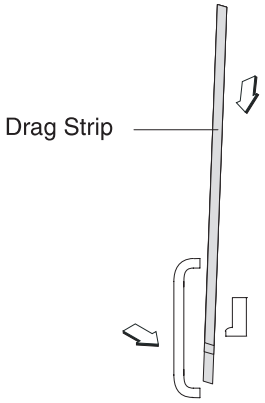

Figure 65. View of Drag Strip from Back of Printer

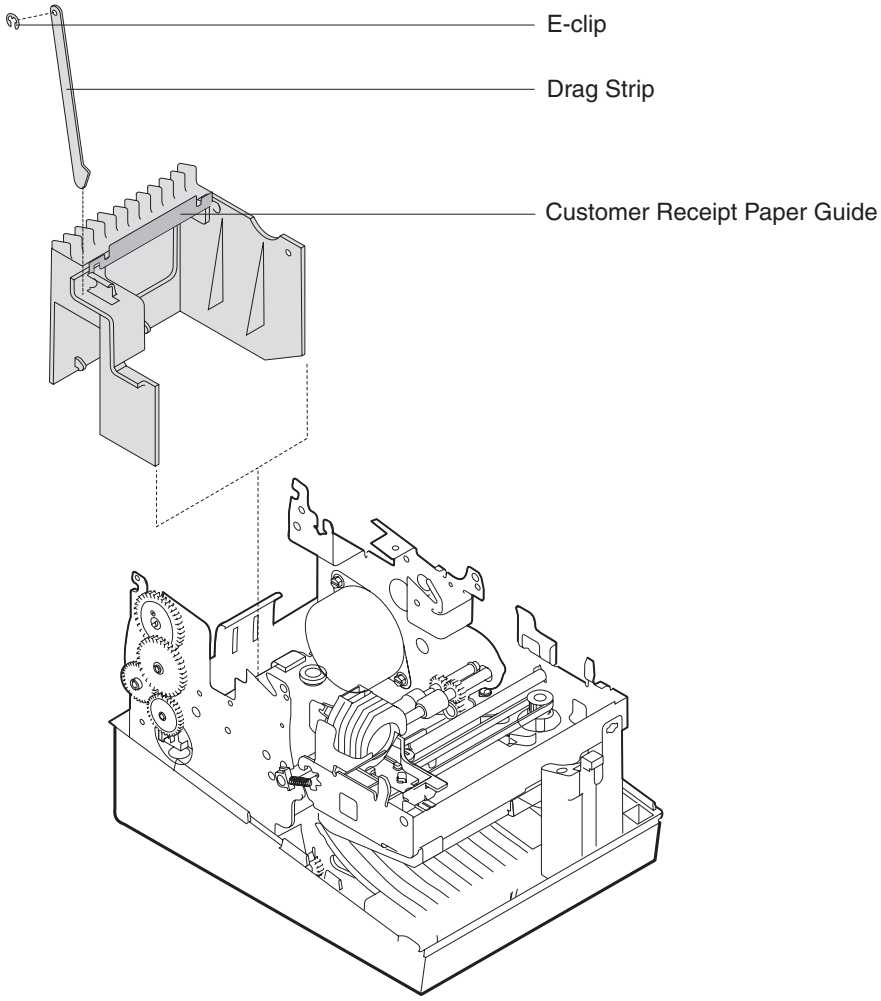

Figure 66. Removing the Drag Strip

Removing and Replacing the Thermal Printhead Assembly

Important

This procedure shows you how to remove the thermal printhead assembly FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

Choose one of the following links to return to the procedure from which you came:

- "Removing and Replacing the Customer Receipt Motor" on page 92.

1. Remove the covers. Go to "Removing and Replacing the Top, Paper, and Ribbon Covers" on page 37.
2. Disconnect the thermal cables from the main logic card.
3. Follow steps 2 and 3 in "Removing and Replacing the Thermal Drag Strip" on page 86.
4. Cut the tie wraps securing the thermal cables to the thermal frame. See Figure 68 on page 89.
5. Remove the **hinge** by rotating it approximately 45° and squeezing the hinge post through the pivot openings. See Figure 67 on page 89.
6. Remove the **thermal printhead assembly**.
7. Remove the E-clip from the cutter stud.
8. If you have the cutter blade configuration shown in Figure 69 on page 90, remove the **cutter stud** by sliding it though the opening in the thermal printhead bracket.

   If you have the cutter blade configuration shown in Figure 70 on page 90, remove the e-clip, slide the cutter blade to the left, and pull the right side of the blade from the frame.
9. Remove the **stationary blade**. See Figure 69 on page 90 or Figure 70 on page 90.
10. Remove the thermal cover.
11. Remove the E-clips from the left side of the printhead shaft. Remove the **printhead shaft** by sliding it through the printhead bracket. See Figure 69 on page 90 or Figure 70 on page 90.
12. Remove the **leaf spring**.
13. The thermal paper switch will be attached to either the thermal frame or the thermal printhead assembly. Remove and replace the switch, if necessary.
14. Reassemble.
15. Check the thermal paper switch operation and adjust if necessary. Go to "Thermal Paper Switch Adjustment" on page 116.
16. When you replace the thermal printhead, run the service diskette and select **Reset Statistics** for the FRU. See "Software Adjustments (Models TI1, TI2, TI3, TI4, TG3 and TG4)" on page 11.

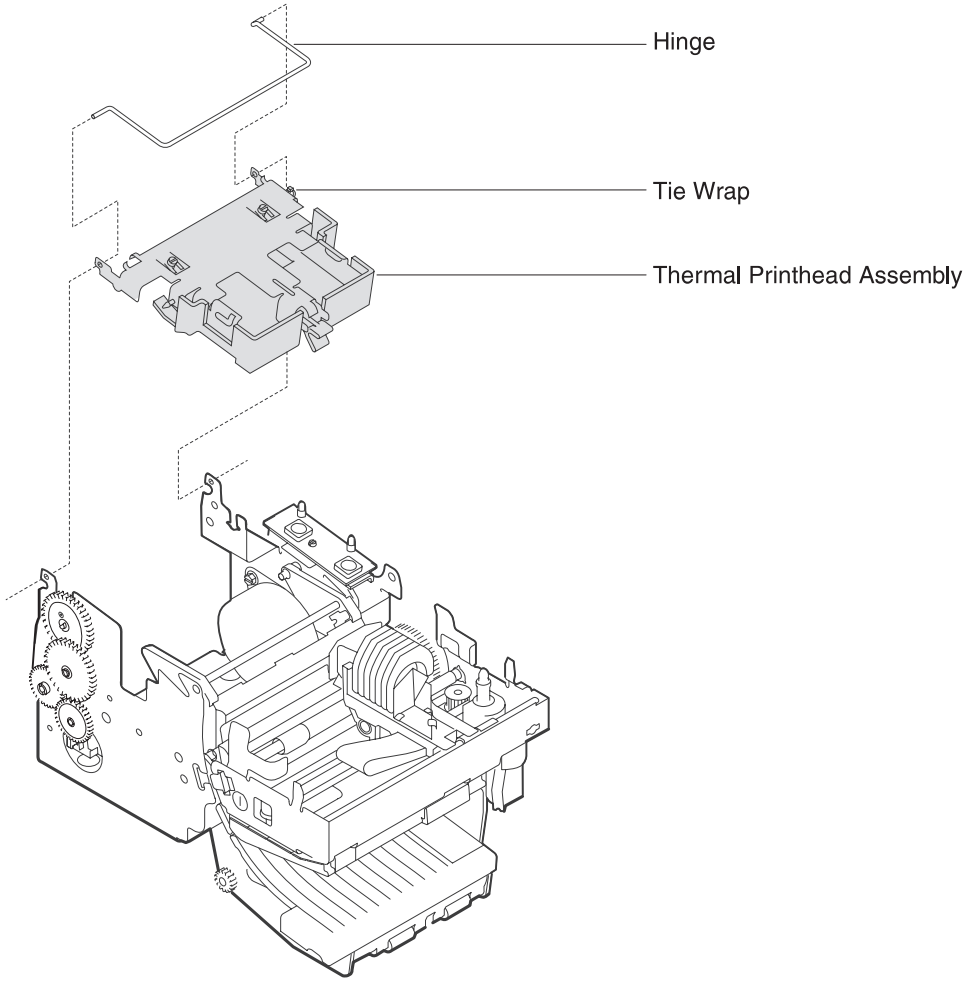

Figure 67. Thermal Printhead Assembly

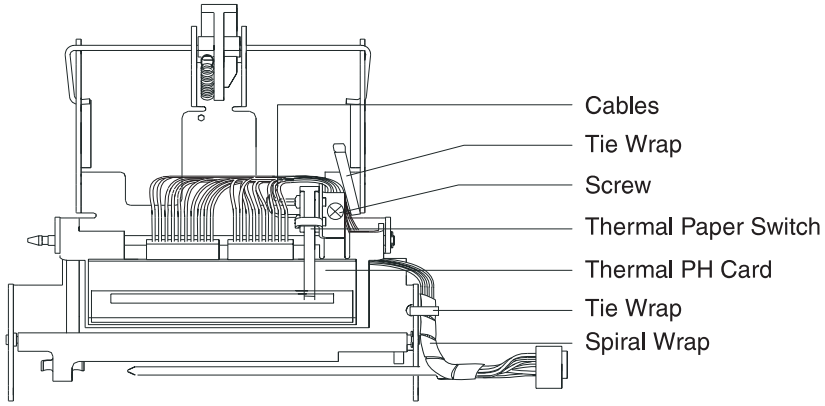

Figure 68. Removing the Spiral Wraps

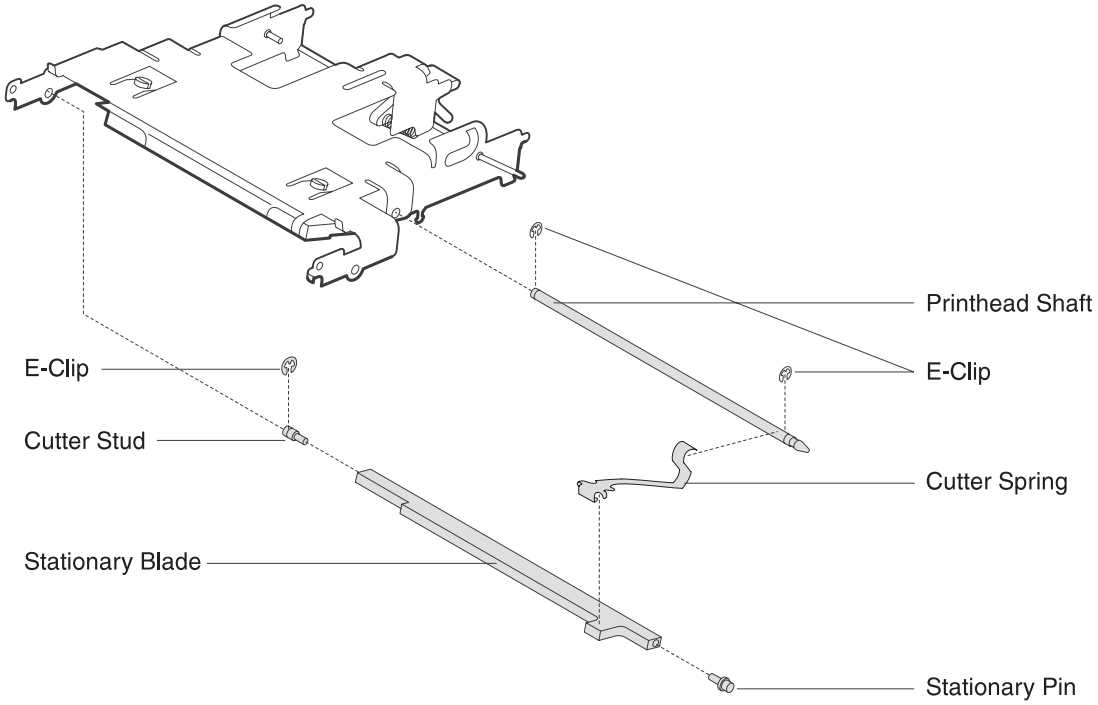

Figure 69. Removing the Cutter Stud, Stationary Blade, and Printhead Shaft (Models TI1 and TI2)

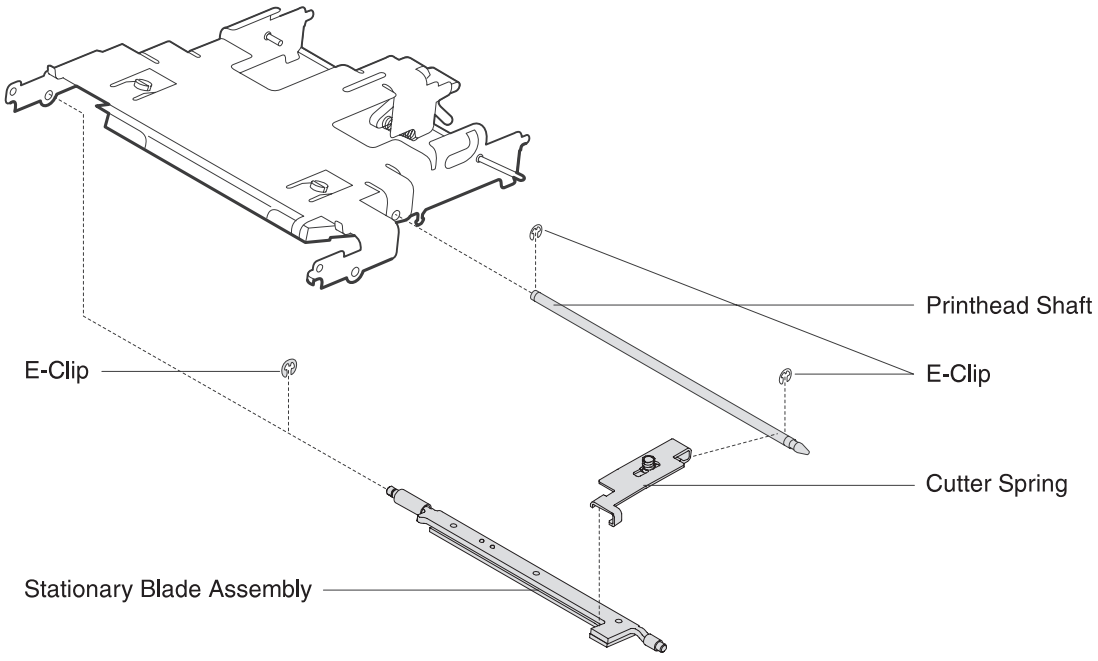

Figure 70. Removing the Cutter Stud, Stationary Blade, and Printhead Shaft (Models TI3, TI4, TG3, and TG4)

Removing and Replacing the Thermal Platen Assembly

Important

This procedure shows you how to remove the thermal platen assembly FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

1. Remove the covers. Go to “Removing and Replacing the Top, Paper, and Ribbon Covers” on page 37.
2. Open the thermal printhead assembly.
3. Rotate the right thermal platen bearing 90° and lift the right side of the platen so that the locating tab on the platen stripper is above the locating notch in the right frame.
4. Unsnap and remove the platen stripper.

   Note: Handle the platen stripper carefully. The edges may be sharp.
5. Remove the E-clip from the idler gear. Remove the thermal idler gear and thermal drive gear.
6. Lift the right side of the thermal platen and slide the left side of the platen out of the frame.
7. Reassemble.

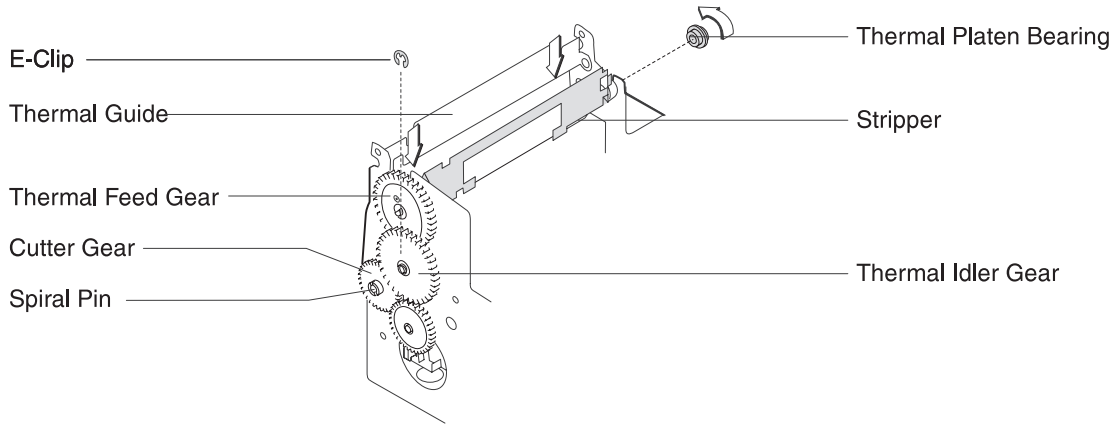

Figure 71. Removing the Thermal Platen Assembly

Removing and Replacing the Customer Receipt Motor

Important

This procedure shows you how to remove the customer receipt motor FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

Use the following link to return to the procedure from which you came:

- "Removing and Replacing the Cutter Gears and Cutter Clutch" on page 94.

1. Remove the covers. Go to "Removing and Replacing the Top, Paper, and Ribbon Covers" on page 37.
2. Disconnect the motor connector from the logic card.
3. Open the thermal frame and remove the paper.
4. Slide the left wall of the paper bucket as far to the left as it will go.

   Note: This may be difficult. You must pull up on the bucket wall while pushing down on the tabs that latch the bottom of the guide.
5. Remove the two screws from the customer receipt motor and remove the motor by sliding it under the edge of the paper guide and then out through the paper bucket area.
6. Reassemble.
7. Slide the left wall of the paper bucket back to its original position.

   Note: This may be difficult. You must pull up on the bucket wall while pushing down on the tabs that latch the bottom of the guide.
8. When you replace the customer receipt motor, run the service diskette and select **Reset Statistics** for the FRU. See "Software Adjustments (Models TI1, TI2, TI3, TI4, TG3 and TG4)" on page 11.

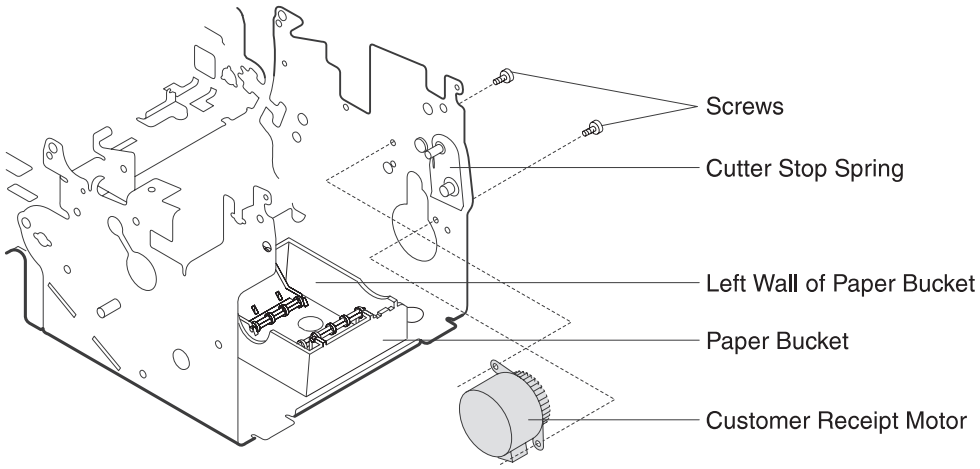

Figure 72. Removing the Customer Receipt Motor

Removing and Replacing the Rotating Cutter Blade and Thermal Guide

Important

This procedure shows you how to remove the rotating cutter blade FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

Use the following link to return to the procedure from which you came:

- "Removing and Replacing the Cutter Gears and Cutter Clutch" on page 94.

1. Remove the covers. Go to "Removing and Replacing the Top, Paper, and Ribbon Covers" on page 37.
2. Remove the rotating cutter blade and thermal guide by prying outward with a screwdriver on the right side of the frame. See Figure 73 or Figure 74 on page 94.
3. Reassemble.

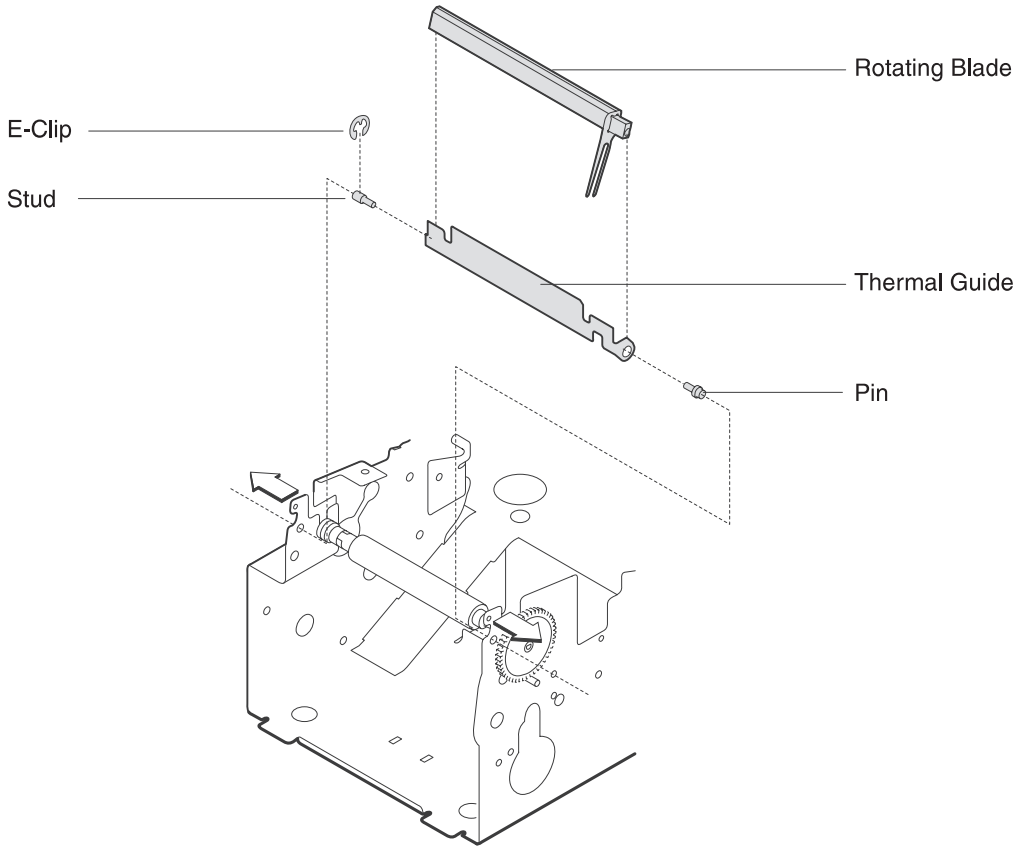

Figure 73. Removing the Rotating Blade and Thermal Guide (Models TI1 and TI2)

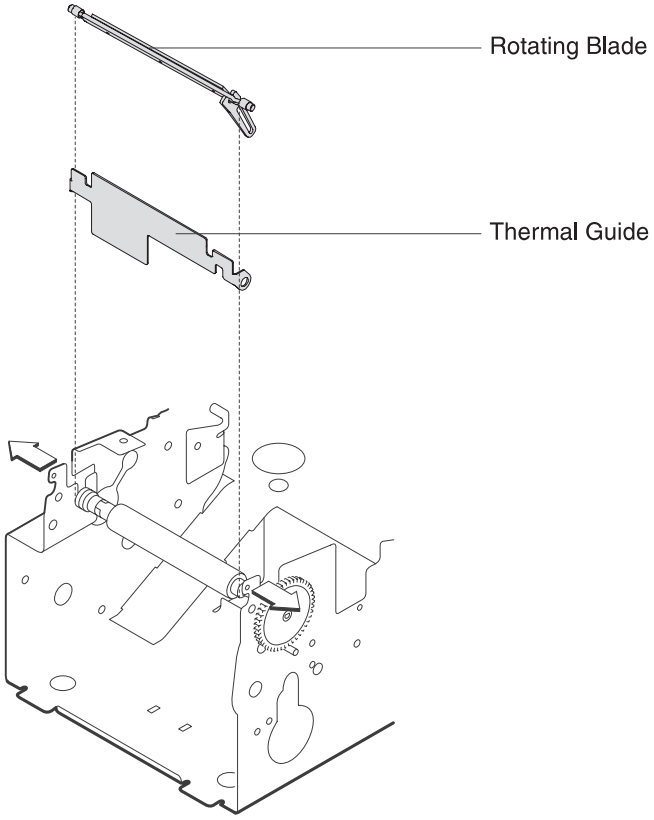

Figure 74. Removing the Rotating Blade and Thermal Guide (Models TI3, TI4, TG3, and TG4)

Removing and Replacing the Cutter Gears and Cutter Clutch

Important

This procedure shows you how to remove the cutter gear FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

1. Remove the covers. Go to “Removing and Replacing the Top, Paper, and Ribbon Covers” on page 37.
2. Remove the **spiral pin** holding the **cutter gear** and remove the cutter gear. See Figure 75 on page 95.
3. Remove the **cutter clutch assembly**.
4. Remove the rotating cutter blade. Go to “Removing and Replacing the Rotating Cutter Blade and Thermal Guide” on page 93.
5. Remove the E-clip holding the **pin gear** and remove the pin gear.
6. Remove the cutter **stop spring** (see Figure 72 on page 92).
7. Reassemble.

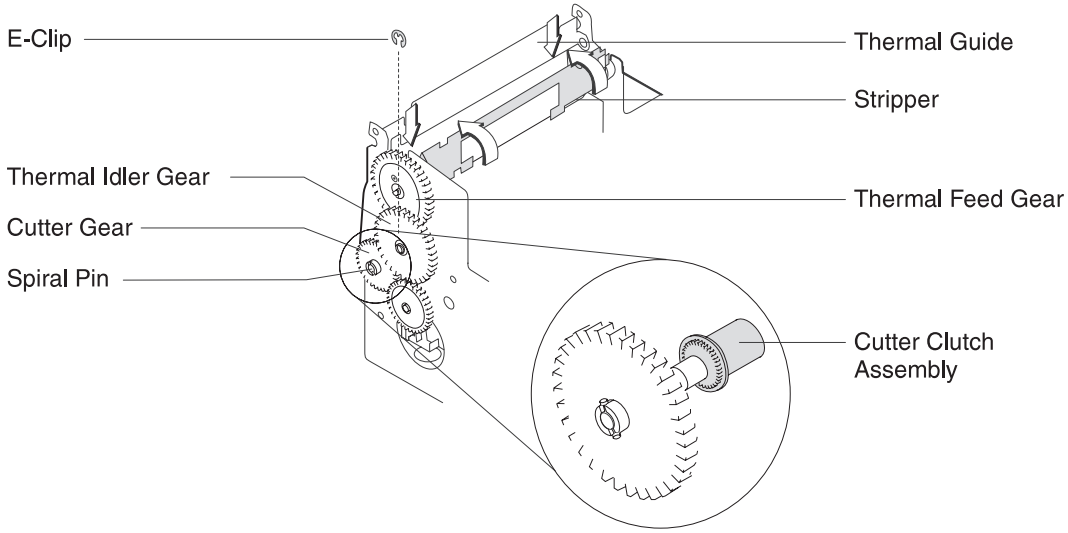

Figure 75. Removing the Cutter Gears

Removing and Replacing the Customer Receipt Paper Guide

Important

This procedure shows you how to remove the customer receipt paper guide FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

1. Remove the covers. Go to “Removing and Replacing the Top, Paper, and Ribbon Covers” on page 37.
2. Remove the rotating cutter blade. Go to “Removing and Replacing the Rotating Cutter Blade and Thermal Guide” on page 93.
3. Remove the thermal printhead assembly. Go to “Removing and Replacing the Thermal Printhead Assembly” on page 88.
4. Remove the thermal platen. Go to “Removing and Replacing the Thermal Platen Assembly” on page 91.
5. Remove the document insert platen. Go to “Removing and Replacing the Document Insert Platen Assembly” on page 59.
6. Release the two locking posts from the frame and remove the **customer receipt paper guide**. See Figure 76.

   Attention: Be careful that you do not break the locking posts.
7. Reassemble.

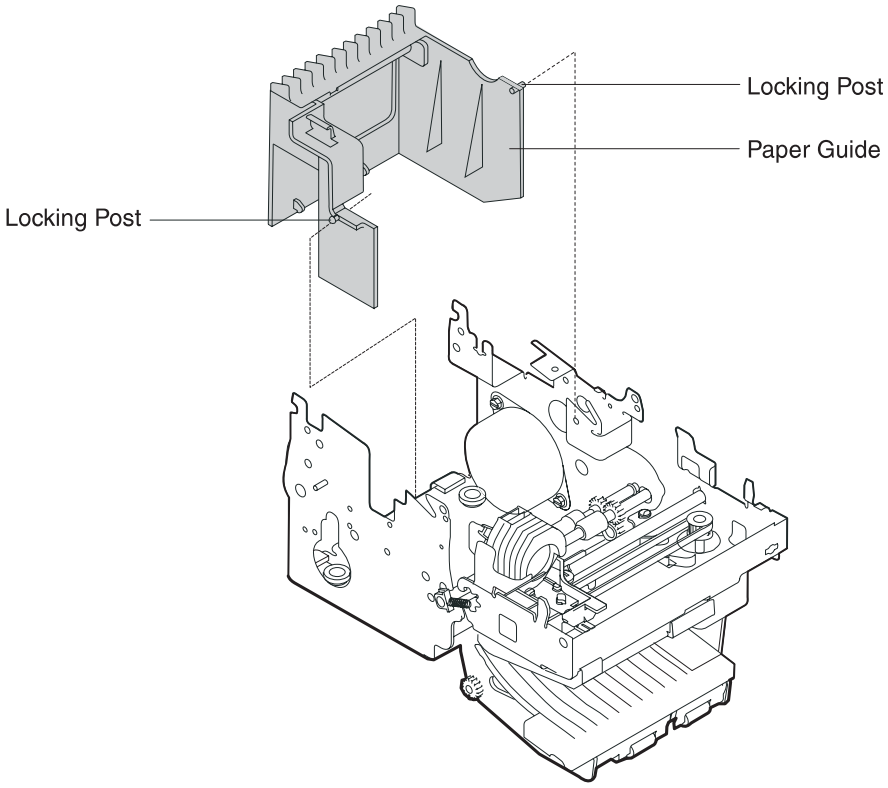

Figure 76. Removing the Customer Receipt Paper Guide

Removing and Replacing the Customer Receipt Paper Bucket

Important

This procedure shows you how to remove the customer receipt paper bucket FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

1. Remove the covers. Go to “Removing and Replacing the Top, Paper, and Ribbon Covers” on page 37.
2. Gently remove the cables connected to the main logic card, except the cable attached to the interface card. See Figure 77 or Figure 78 on page 98.
3. Twist the front shock mount to the horizontal position and pull it out. See Figure 79 on page 98.
4. Lift the front of the printer frame high enough to reach in and disconnect the MICR reader cable. See Figure 79 on page 98.
5. Lift the frame out of the bottom cover.
6. Unlock the locking tabs from the underside of the frame and remove the **customer receipt paper bucket**. See Figure 80 on page 99.
7. The right side of the bucket will have to be snapped by the triangular guide rib on the paper guide.
8. Reassemble.

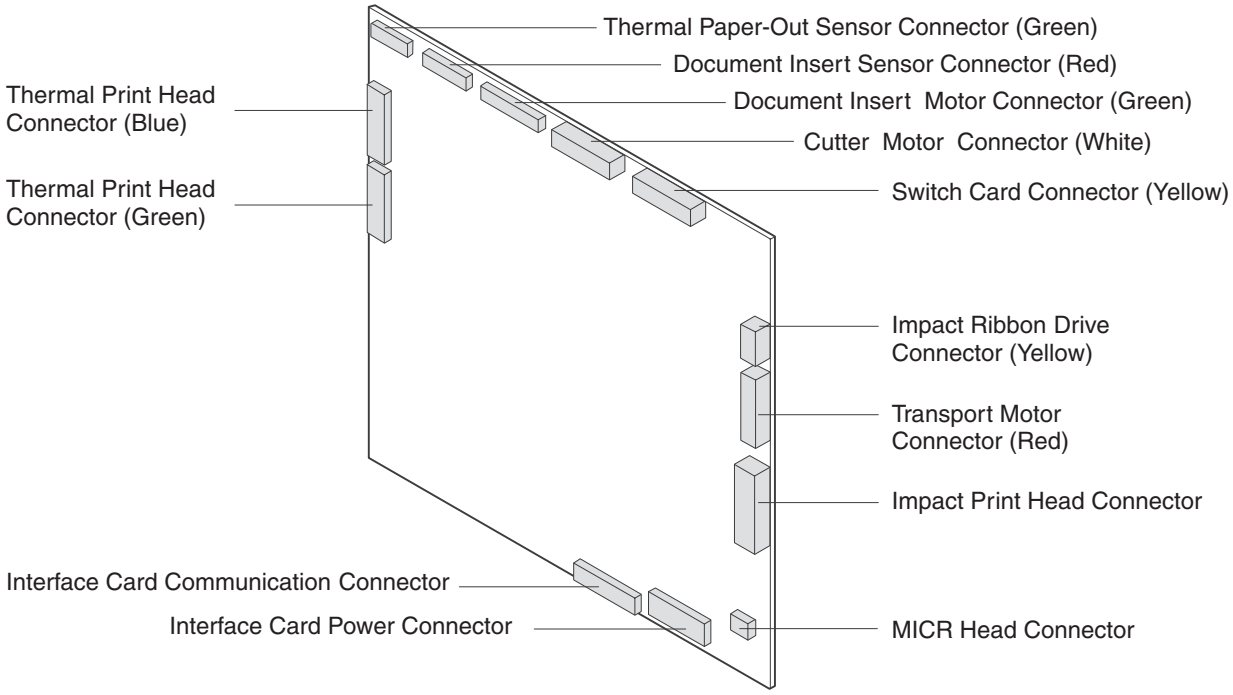
Thermal Paper-Out Sensor Connector (Green)
Document Insert Sensor Connector (Red)
Thermal Print Head Connector (Blue)
Document Insert Motor Connector (Green)
Cutter Motor Connector (White)
Thermal Print Head Connector (Green)
Switch Card Connector (Yellow)
Impact Ribbon Drive Connector (Yellow)
Transport Motor Connector (Red)
Impact Print Head Connector
Interface Card Communication Connector
Interface Card Power Connector
MICR Head Connector

Figure 77. Disconnecting the Cables Connected to the Main Logic Card (Models TI1 and TI2)

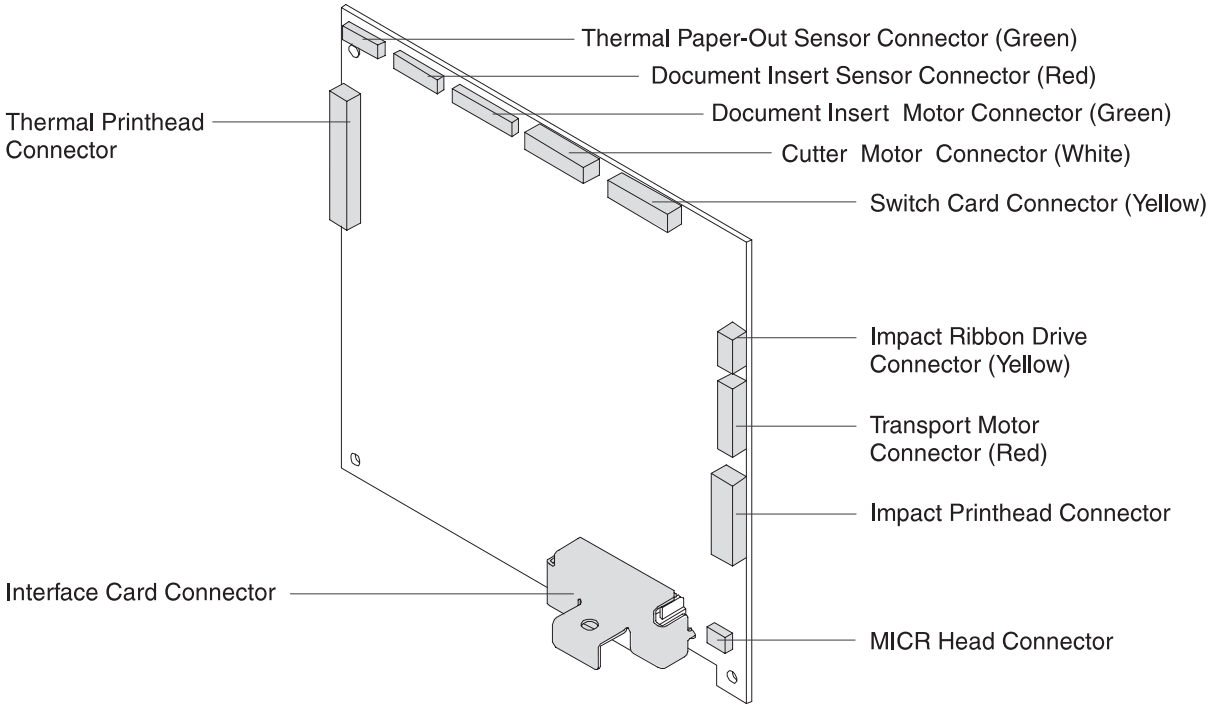
Thermal Paper-Out Sensor Connector (Green)
Document Insert Sensor Connector (Red)
Thermal Printhead Connector
Document Insert Motor Connector (Green)
Cutter Motor Connector (White)
Switch Card Connector (Yellow)
Impact Ribbon Drive Connector (Yellow)
Transport Motor Connector (Red)
Impact Printhead Connector
Interface Card Connector
MICR Head Connector

Figure 78. Disconnecting the Cable Connected to the Main Logic Card (Models TI3, TI4, TG3, and TG4)

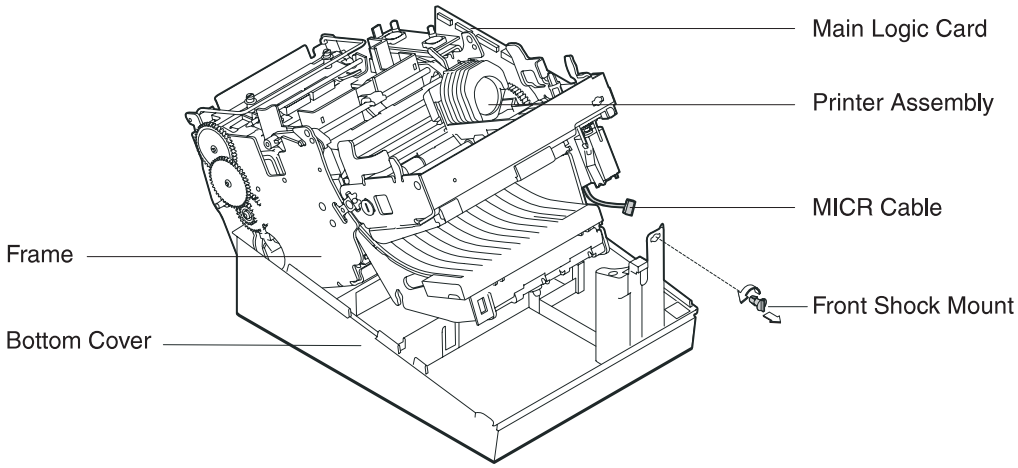

Figure 79. Removing the Front Shock Mount and Disconnecting the MICR Cable

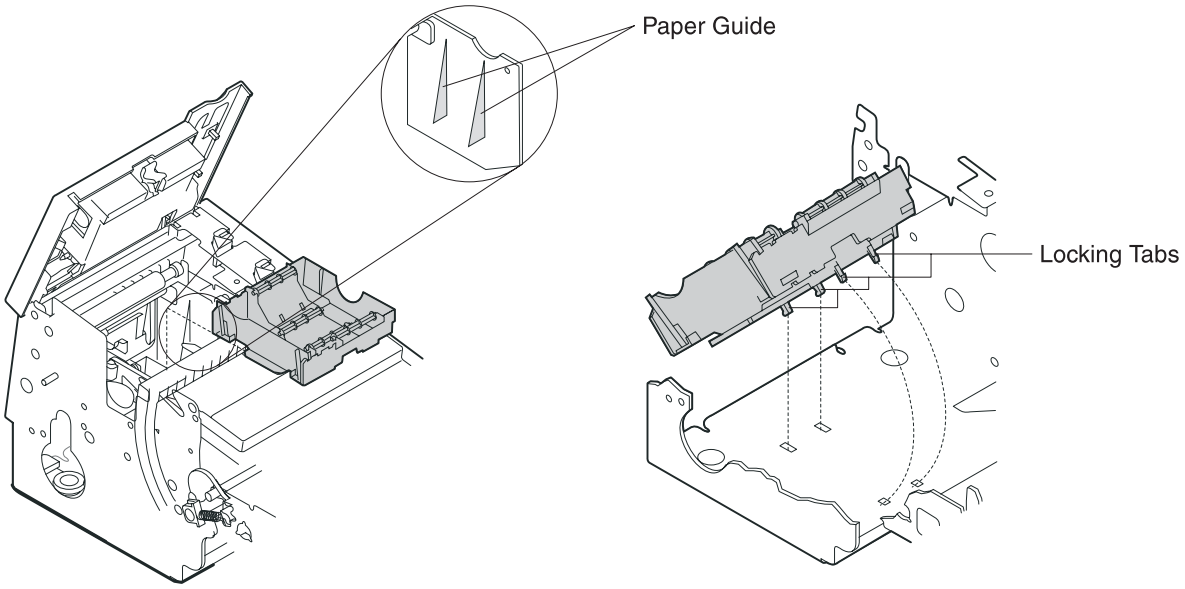

Figure 80. Customer Receipt Paper Bucket

Removing and Replacing the Document Insert Motor and Gears

Important

This procedure shows you how to remove the document insert motor and gear FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

1. Remove the covers. Go to “Removing and Replacing the Top, Paper, and Ribbon Covers” on page 37.
2. Remove the customer receipt paper guide. Go to “Removing and Replacing the Customer Receipt Paper Guide” on page 96.
3. Gently remove the cables connected to the main logic card, except the cable attached to the interface card. See Figure 81 on page 101 or Figure 82 on page 101.
4. Remove the front shock mount. See Figure 83 on page 102.
5. Lift the front of the printer frame high enough to reach in and disconnect the MICR reader cable. See Figure 83 on page 102.
6. Lift the frame out of the bottom cover.
7. Remove the E-clip holding the motor gear to the motor. See Figure 84 on page 102.
8. Remove the **motor gear**.
9. Remove the two screws and then remove the **document insert feed motor**. See Figure 85 on page 103.
10. Reassemble.
11. When you replace the DI motor, run the service diskette and select **Reset Statistics** for the FRU. See “Software Adjustments (Models TI1, TI2, TI3, TI4, TG3 and TG4)” on page 11.

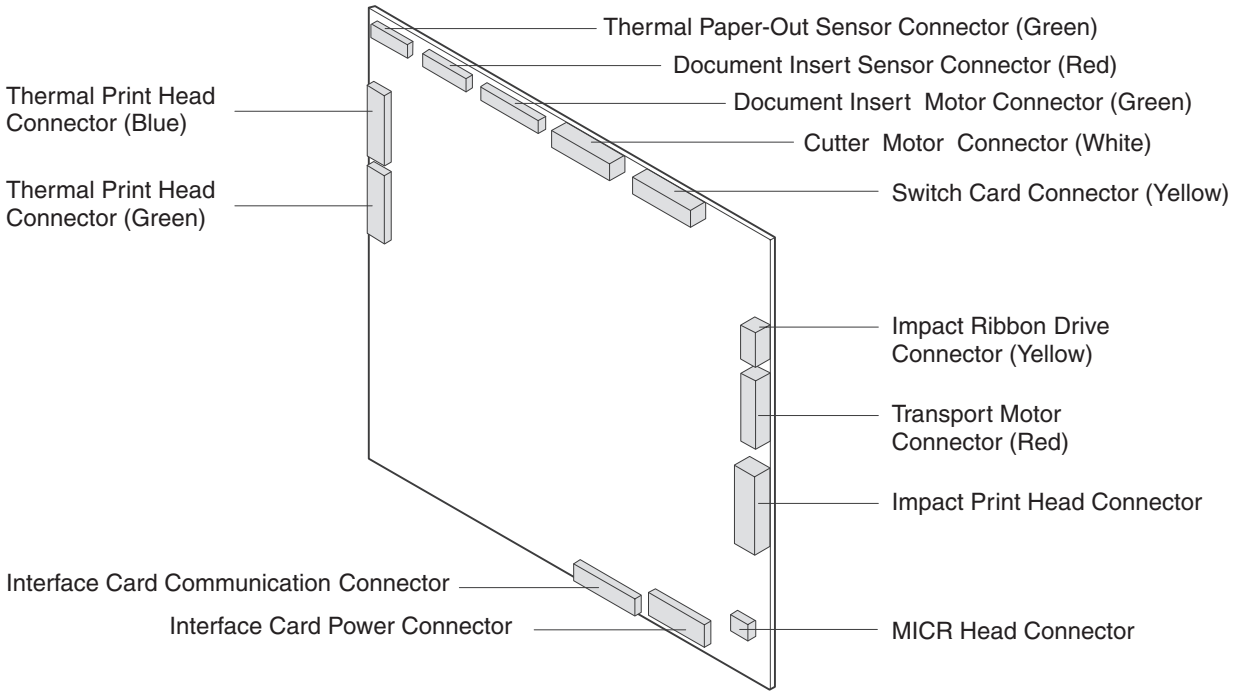
Thermal Paper-Out Sensor Connector (Green)
Document Insert Sensor Connector (Red)
Thermal Print Head Connector (Blue)
Document Insert Motor Connector (Green)
Cutter Motor Connector (White)
Thermal Print Head Connector (Green)
Switch Card Connector (Yellow)
Impact Ribbon Drive Connector (Yellow)
Transport Motor Connector (Red)
Impact Print Head Connector
Interface Card Communication Connector
Interface Card Power Connector
MICR Head Connector

Figure 81. Disconnecting the Logic Card Cables (Models TI1 and TI2)

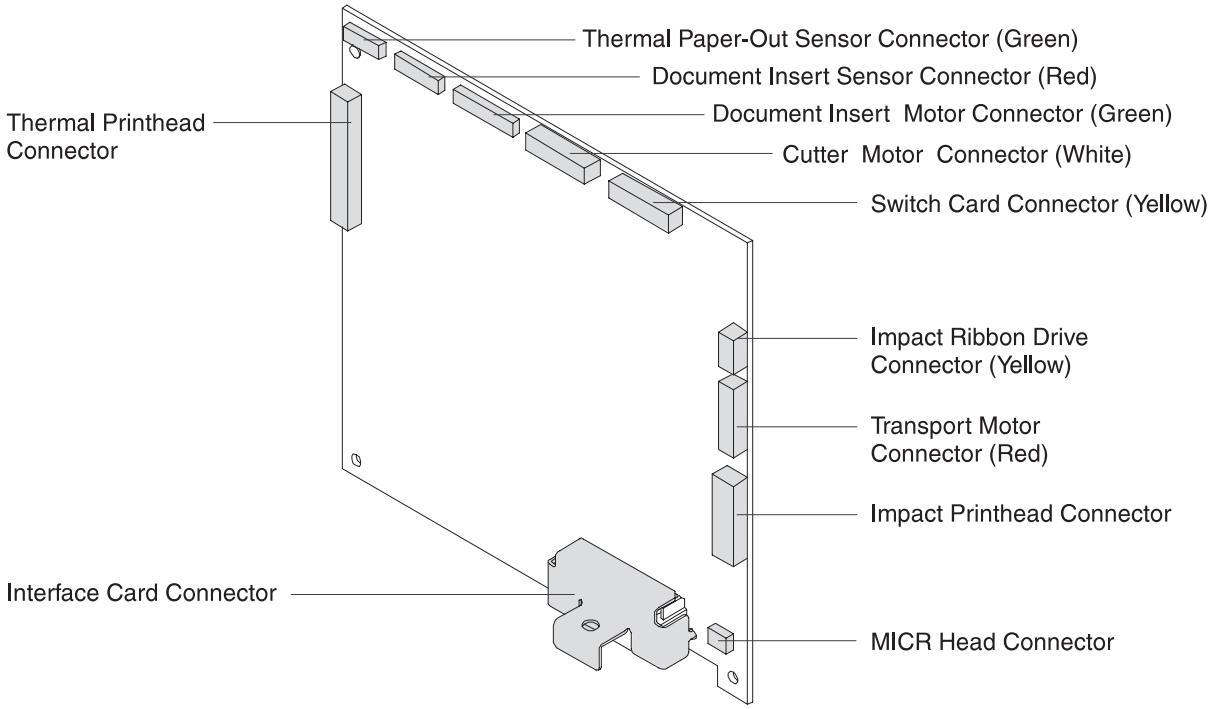
Thermal Paper-Out Sensor Connector (Green)
Document Insert Sensor Connector (Red)
Thermal Printhead Connector
Document Insert Motor Connector (Green)
Cutter Motor Connector (White)
Switch Card Connector (Yellow)
Impact Ribbon Drive Connector (Yellow)
Transport Motor Connector (Red)
Impact Printhead Connector
Interface Card Connector
MICR Head Connector

Figure 82. Disconnecting the Logic Card Cables (Models TI3, TI4, TG3, and TG4)

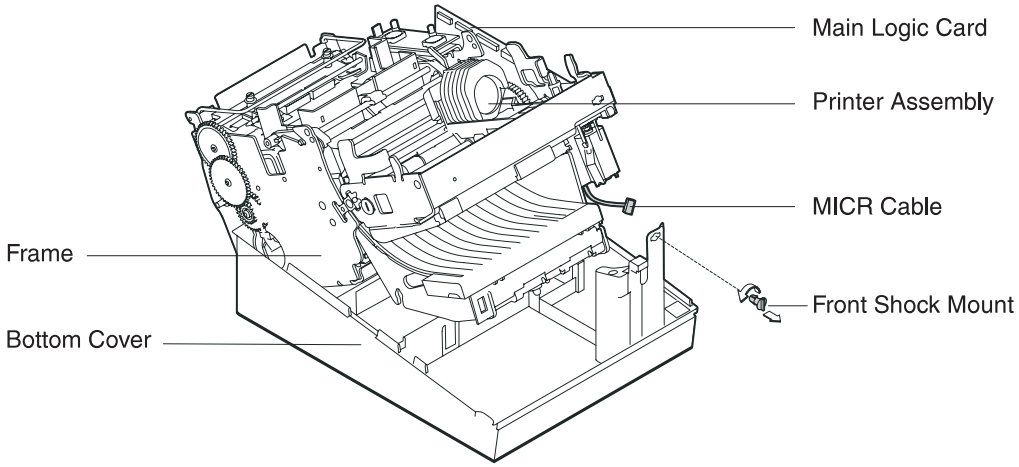

Figure 83. Removing the Front Shock Mount and Disconnecting the MICR Cable

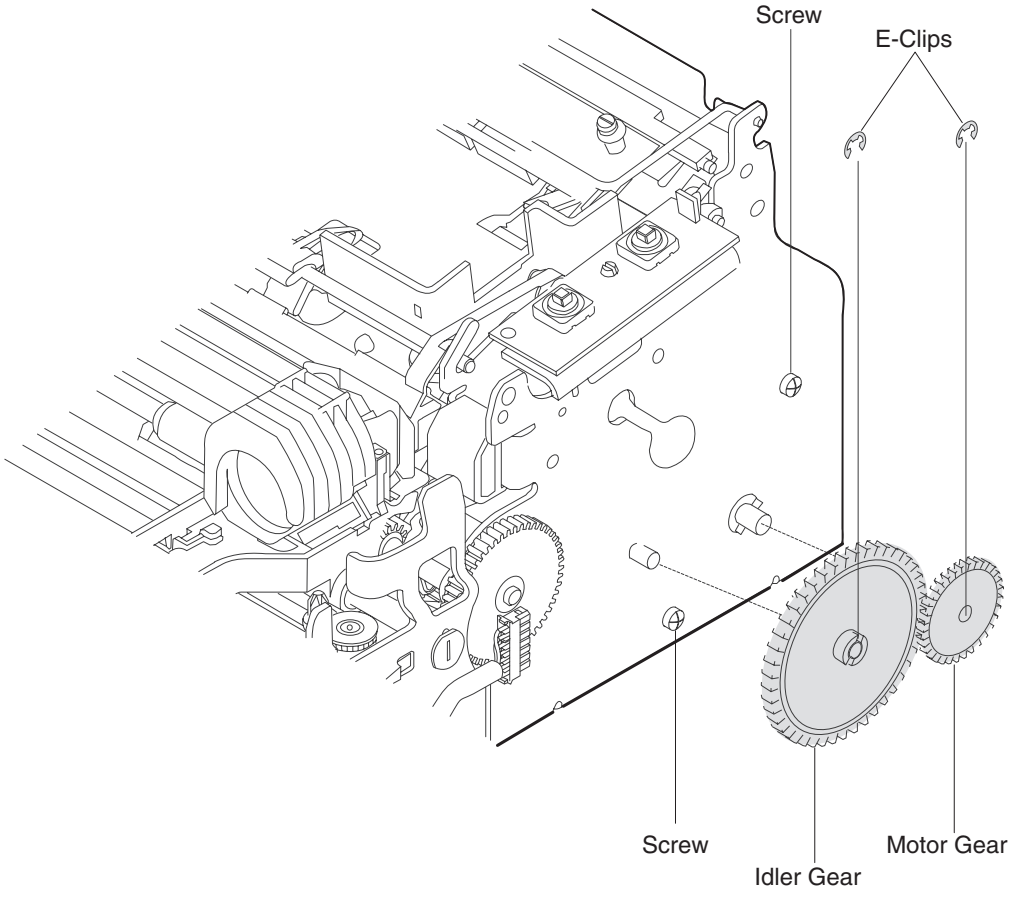

Figure 84. Removing the Motor Gear and Idler Gear

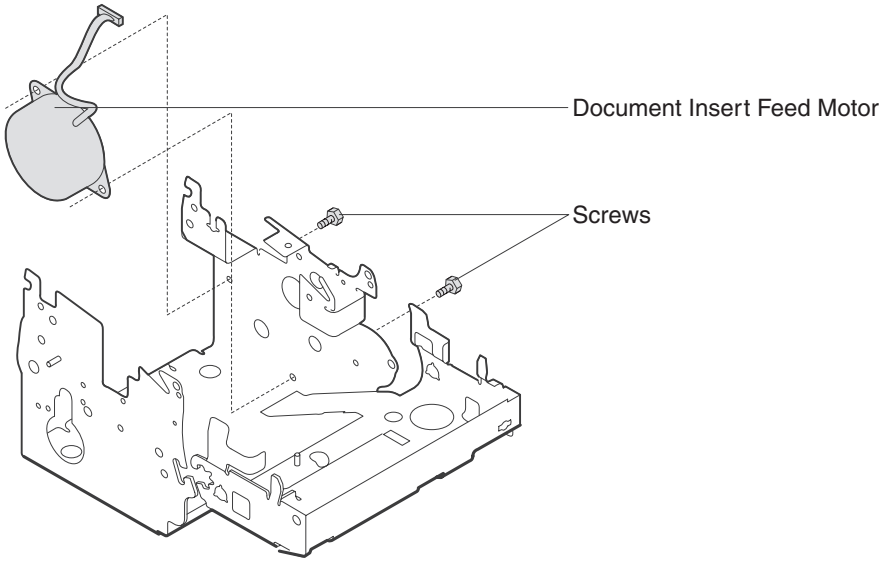

Figure 85. Removing the Document Insert Feed Motor

Chapter 4. Hardware Adjustment Procedures

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Mechanical Adjustments 106
DI Forms Compensation Adjustment 106
Printhead Platen Gap Adjustment 108
DI Open Lever Adjustment 110
Cutter Blade Run-In 111
Thermal Printhead Adjustment 114
Thermal Paper Switch Adjustment 116
Document Sensor Threshold Reset 117

DANGER

Never work on equipment or connect or disconnect signal cables during periods of lightning activity.

CAUTION:
For your safety, connect equipment requiring electrical power to a correctly wired and grounded outlet.

Note: For translations of these safety notices, see “Appendix D. Translated Safety Notices” on page 201.

Electrostatic Discharge (ESD)

Attention: ESD damage can occur when there is a difference in charge between the part, the product, and the service person. No damage will occur if the service person, the product, and the part being installed are at the same charge level.

ESD Damage Prevention:

Anytime a service action involves physical contact with logic cards, modules, back-panel pins, or other ESD sensitive (ESDS) parts, the service person must be connected to an ESD common ground point on the product through the ESD wrist strap and cord.

The ESD ground clip can be attached to any frame ground, ground braid, green wire ground, or the round ground prong on the ac power plug. Coax or connector outside shells can also be used.

Handling Removed Cards:

Logic cards removed from a product should be placed in ESD-protective containers. No other object should be allowed inside the ESD container with the logic card. Attach tags or reports that must accompany the card to the outside of the container.

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Mechanical Adjustments

The following adjustment procedures are included in this section.

Important: Procedures 1 through 3 must be done is sequence.

1. DI Forms Compensation Adjustment
2. Printhead/Platen Gap Adjustment
3. DI Open Lever Adjustment
4. Cutter Blade Run In
5. Thermal Printhead Adjustment
6. Thermal Switch Adjustment
7. Document Sensor Threshold Reset

DI Forms Compensation Adjustment

Before making this adjustment, make sure the printhead is not pushed against the platen.

1. Turn the printhead gap adjustment bushings away from the platen (clockwise when looking at the left side of the printer). Ensure that the printhead is not in the far-right position. See Figure 86 on page 107.
2. Rotate the shaft eccentric bearing until the DI backup roll is away from the DI feed roll shaft (clockwise). A single sheet of paper should be able to slip between the backup roll and the feed roll.
3. Rotate the shaft eccentric bearing counterclockwise so that the backup roll moves toward the feed roll. Make sure that the paper is removed before continuing the adjustment.
4. Rotate the shaft eccentric bearing until the feed roll shaft end nearest to the eccentric moves away from the pressure roll shaft 0.05 mm (0.002 in). You can measure this by using a feeler gauge between the frame and the left feed roll bearing.
5. Run one of the 4610 diagnostic and adjustment utilities. See “Software Adjustments (Models TI1, TI2, TI3, TI4, TG3 and TG4)” on page 11.
6. Continue with “Printhead Platen Gap Adjustment” on page 108.

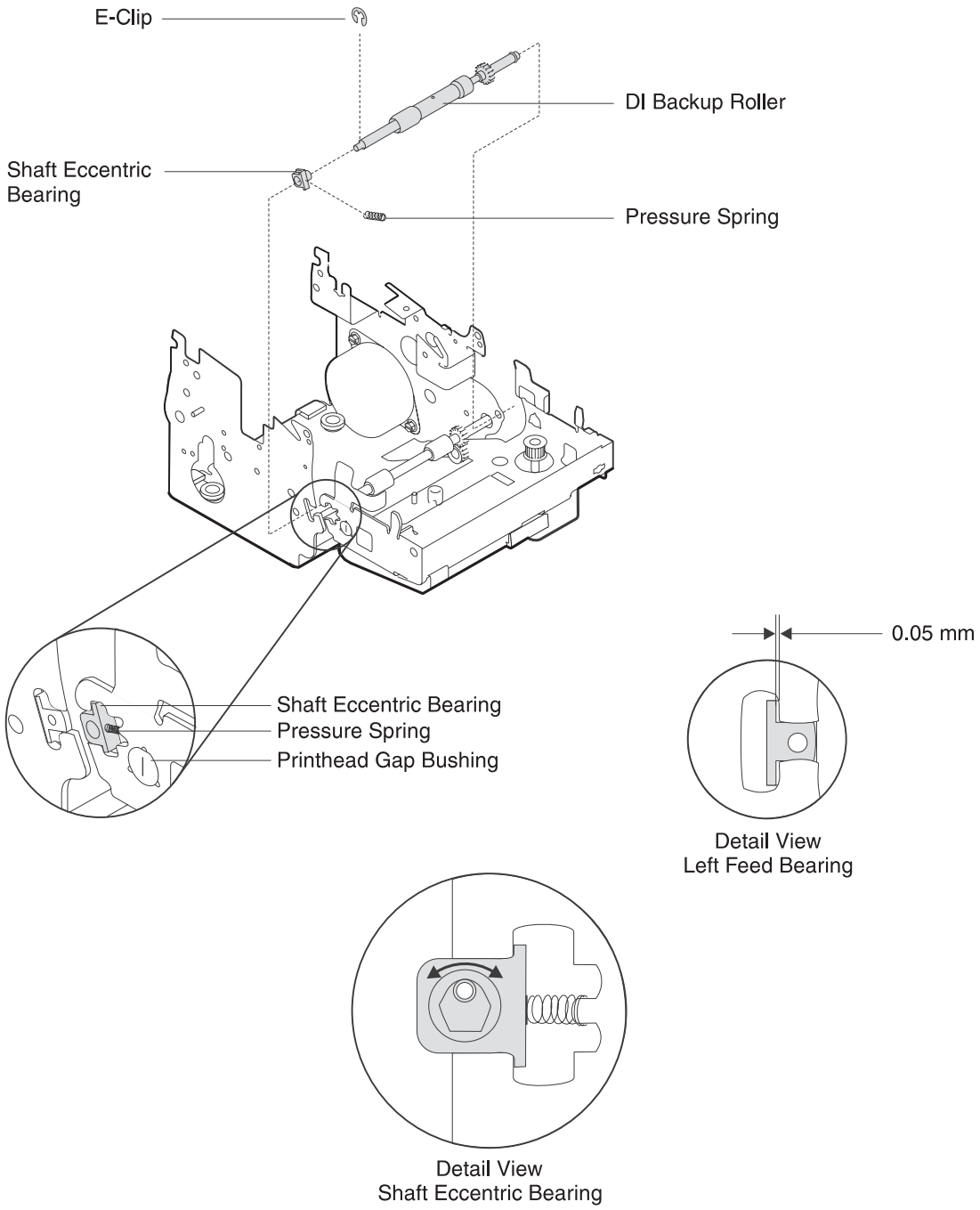

Figure 86. DI Forms Adjustment

Printhead Platen Gap Adjustment

The printhead platen gap needs to be adjusted to 0.508 mm (0.02 in.) nominally across the length of the platen. This is accomplished by adjusting the printhead gap bushings located at the left and right ends of the carriage shaft. The gap setting tool FRU part number is 42H1190. A sealant might be required to reseal the SureMark cover set.

1. The printer mechanism must be installed in the printer base and resting on a flat and level surface.

   For printers with a flipper installed, the flipper cover must be installed.

   The thermal print mechanism must be closed. The thermal paper cover does not have to be in place.
2. Remove the ribbon from the printer (see “Ribbon Loading” on page 151).
3. Move the printhead carriage to the left. Check the printhead gap by sliding the gap setting tool between the printhead and the ribbon guide. See Figure 87 on page 109.
   - The gap setting tool only needs to be pushed down until it reaches the print wires on the printhead.
   - The force used to move the gap setting tool up and down in the gap needs to be very light.
   - There should be no movement of the printhead.
4. Move the printhead carriage to the right and check the printhead gap as described in step 3.
5. If both adjustments are correct, no further action is required. If either adjustment is incorrect, return the printhead carriage to the left.
6. Adjust the left printhead gap eccentric using a screwdriver. The gap between the ribbon guide and the print wires on the printhead should be 0.388 +/- 0.02 mm (0.0153 +/- 0.0008 in). Adjust it with the printhead gap setting tool that is provided with the printhead FRU.
7. For right printhead gap adjustment, remove the SureMark cover set.
8. Move the printhead carriage to the right and adjust the right printhead gap eccentric using a screwdriver (see step 6).
9. Check the left side and the right side again. Re-adjust if necessary.
10. If the eccentrics appear snug during the adjustment phase (steps 6 through 8), replace the SureMark cover set and proceed. If the eccentrics did not appear snug during the adjustment phase, apply a small amount of an appropriate sealant (nail polish, a sealant from Glyptal, Inc., etc.) across the original seals. If the eccentrics appear excessively loose, they may require replacement.

    Note: Loctite® is not an acceptable sealant.
11. Replace the SureMark cover set.
12. Check the left side and the right side again. Replacing the cover may introduce variations. Readjust if necessary.
13. Reinstall the ribbon and perform a print test to check function and print quality. See “Customer Receipt Test” on page 25 for information on performing a CR print test.

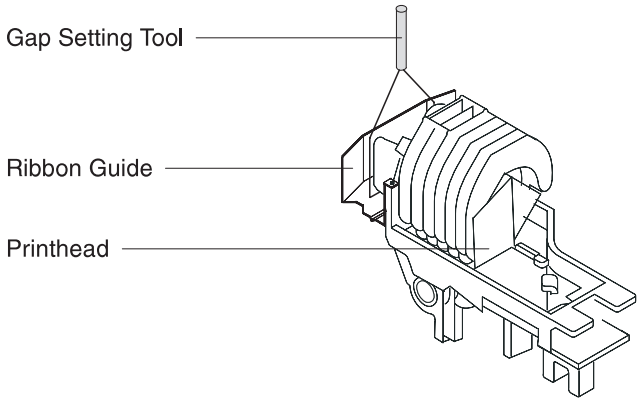

Figure 87. Placement of Gap Setting Tool

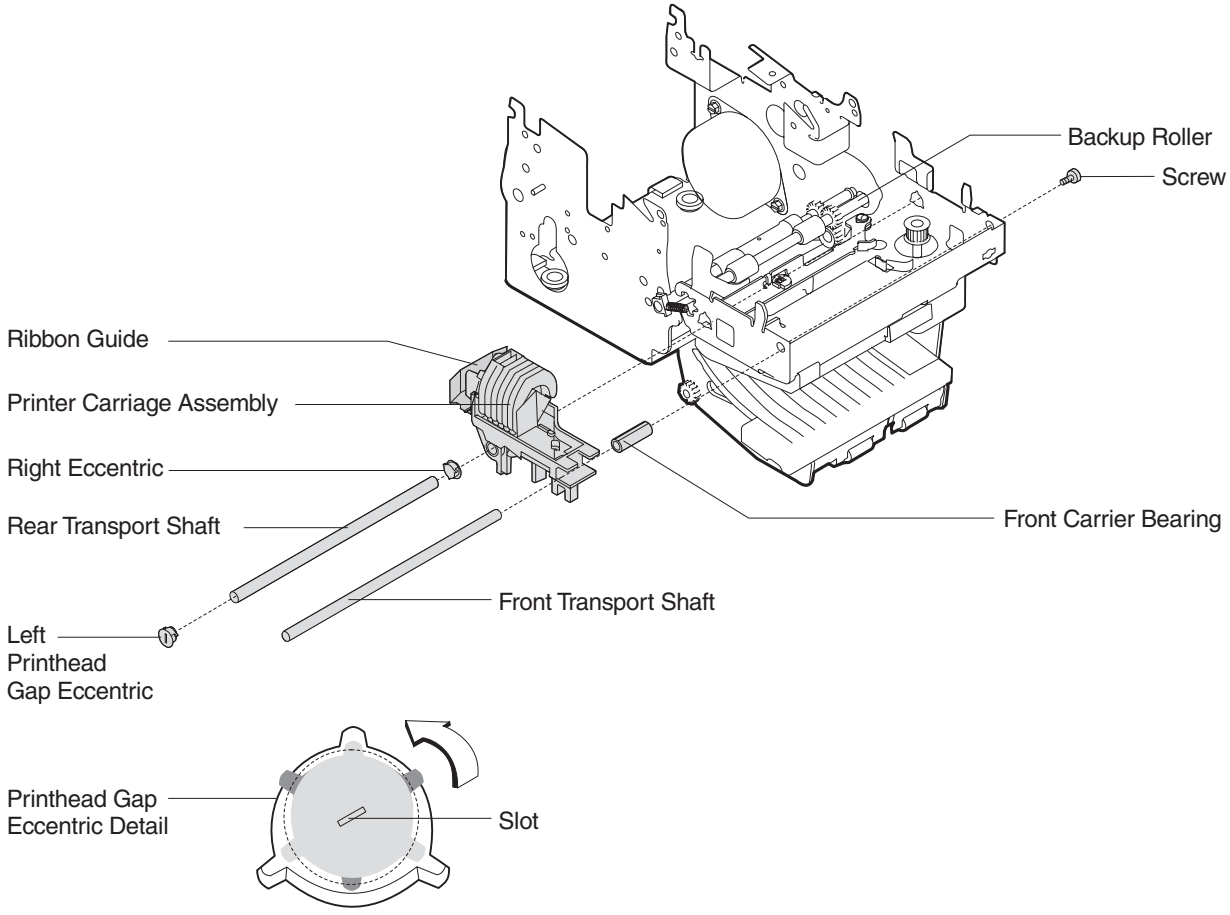

Figure 88. Platen Gap Adjustment

DI Open Lever Adjustment

1. Move the impact printhead carriage to the right until it is 2 mm from the right wall of the frame.
2. Use a screwdriver to adjust the DI open adjustment bushing. Adjust until the left end of the backup roll shaft has moved 2.5 mm (0.098 in. or 0.1 in.) from the closed position. This can be measured by the distance the left backup roll bearing moves back relative to the frame (see Figure 89).
3. Run one of the 4610 diagnostic and adjustment utilities. See “Software Adjustments (Models TI1, TI2, TI3, TI4, TG3 and TG4)” on page 11.

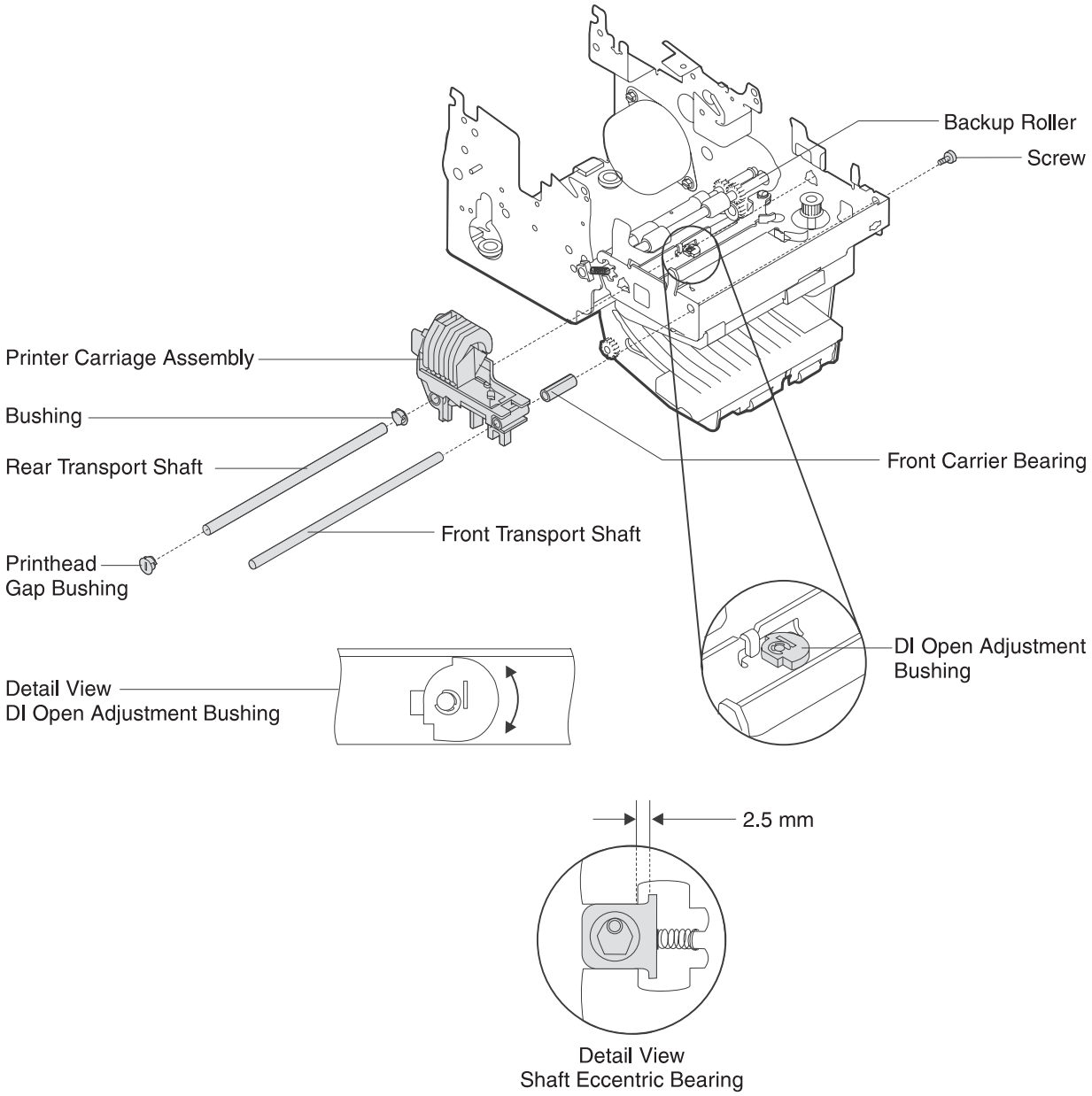

Figure 89. DI Open Lever Adjustment

updated October 30, 2001

Cutter Blade Run-In

Note: This procedure needs to be done whenever the cutter blades are replaced.

1. Make sure the thermal bracket is closed and there is no paper in the printer.
2. Manually rotate the cutter blade for 5 cycles by rotating the thermal feed gears. This ensures that the blades are correctly run-in. See Figure 90 on page 112 or Figure 91 on page 113.
3. Metal debris left on the blades must be removed by manually operating additional cycles.

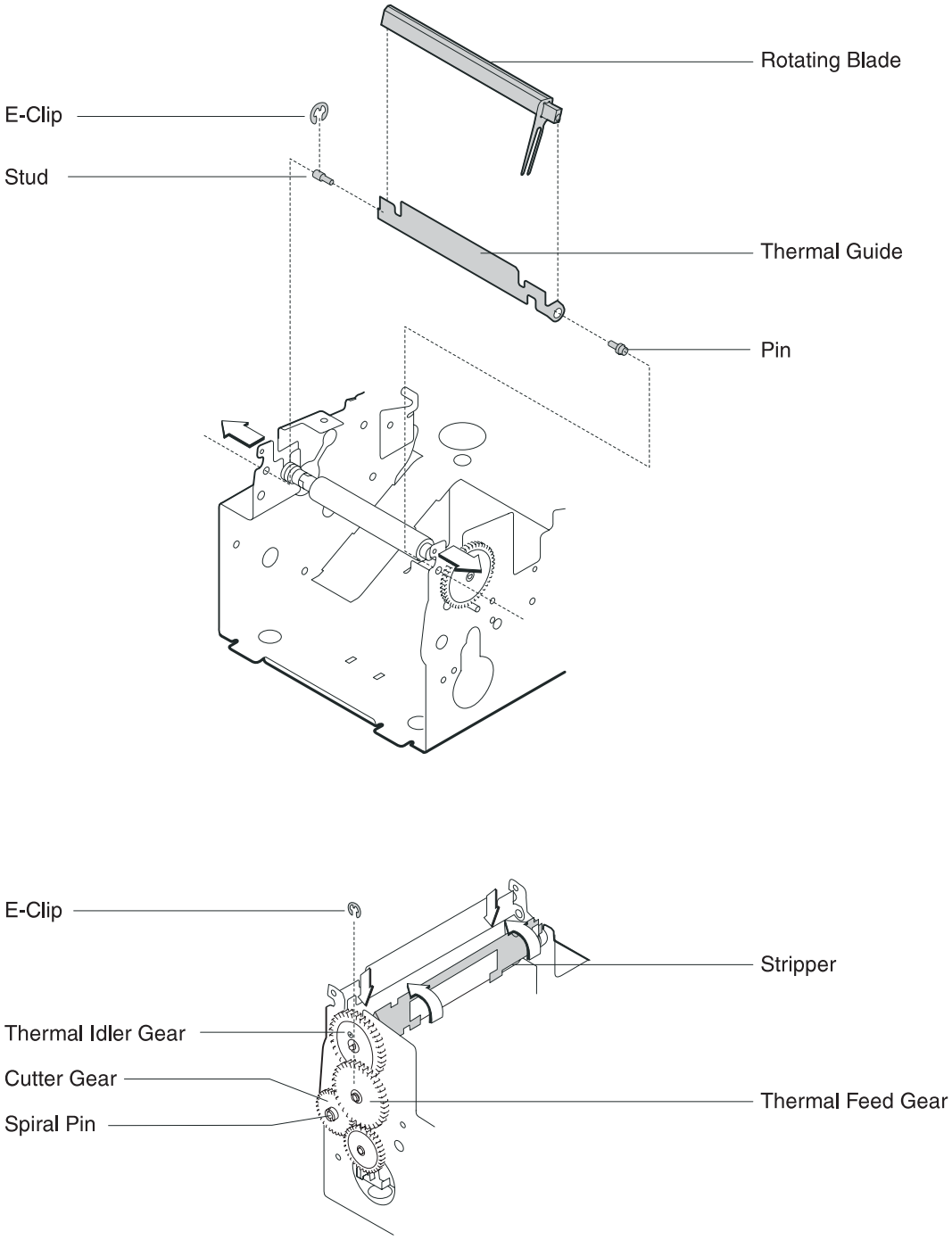

Figure 90. Cutter Blade Run-In (Models TI1 and TI2)

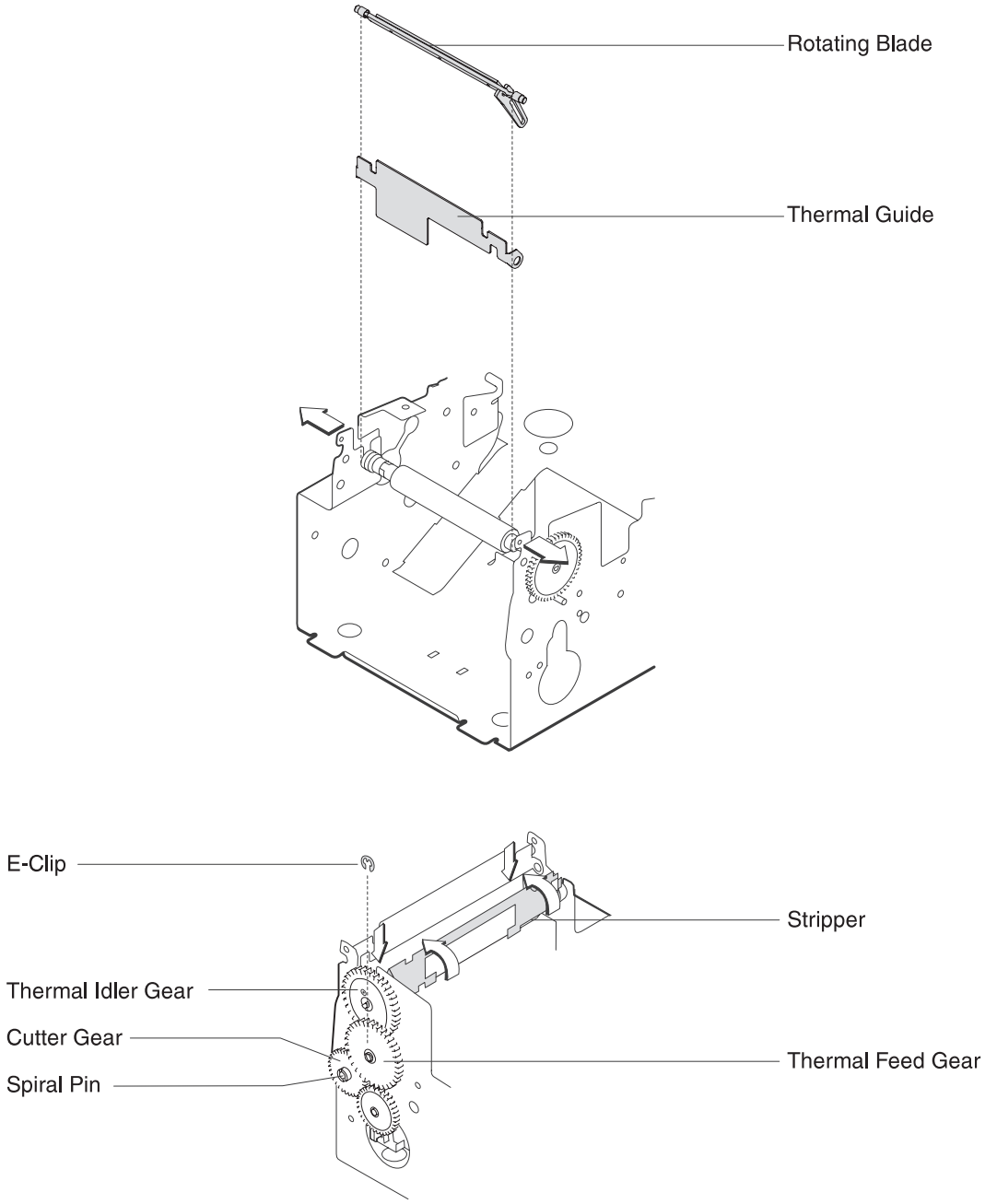

Figure 91. Cutter Blade Run-In (Models TI3 TI4, TG3 and TG4)

Thermal Printhead Adjustment

Note: The thermal printhead should be adjusted prior to adjusting the thermal switch.

1. The thermal printhead must be mounted in the printer and the customer receipt cover removed.
2. With the thermal bracket open, loosen both of the shoulder screws until the thermal printhead and the shoulder screws slide smoothly within the thermal printhead mounting bracket slots. See Figure 92 on page 115.
3. Close the thermal bracket.
4. Use a small screwdriver to press on the shaft of the shoulder screw, between the mounting bracket and the printhead bracket.
5. Slide the printhead to the end of the slots, towards the back of the printer.
6. Run the CR offline test (see “Customer Receipt Test” on page 25). Observe the thermal print density as it prints.
7. Slide the thermal printhead using steps 4 and 5, one side at a time, towards the front of the printer. As you move the printhead, the printing will become darker. When the print is most dense and uniform across the entire print line, the thermal printhead adjustment is complete.
8. Tighten the two shoulder screws till they are snug. **Do not overtighten the shoulder screws**.
9. Test the printer to ensure continued print quality. Go to “Offline Tests” on page 25. Re-adjust if necessary.
10. Check the thermal paper switch adjustment. Go to “Thermal Paper Switch Adjustment” on page 116.

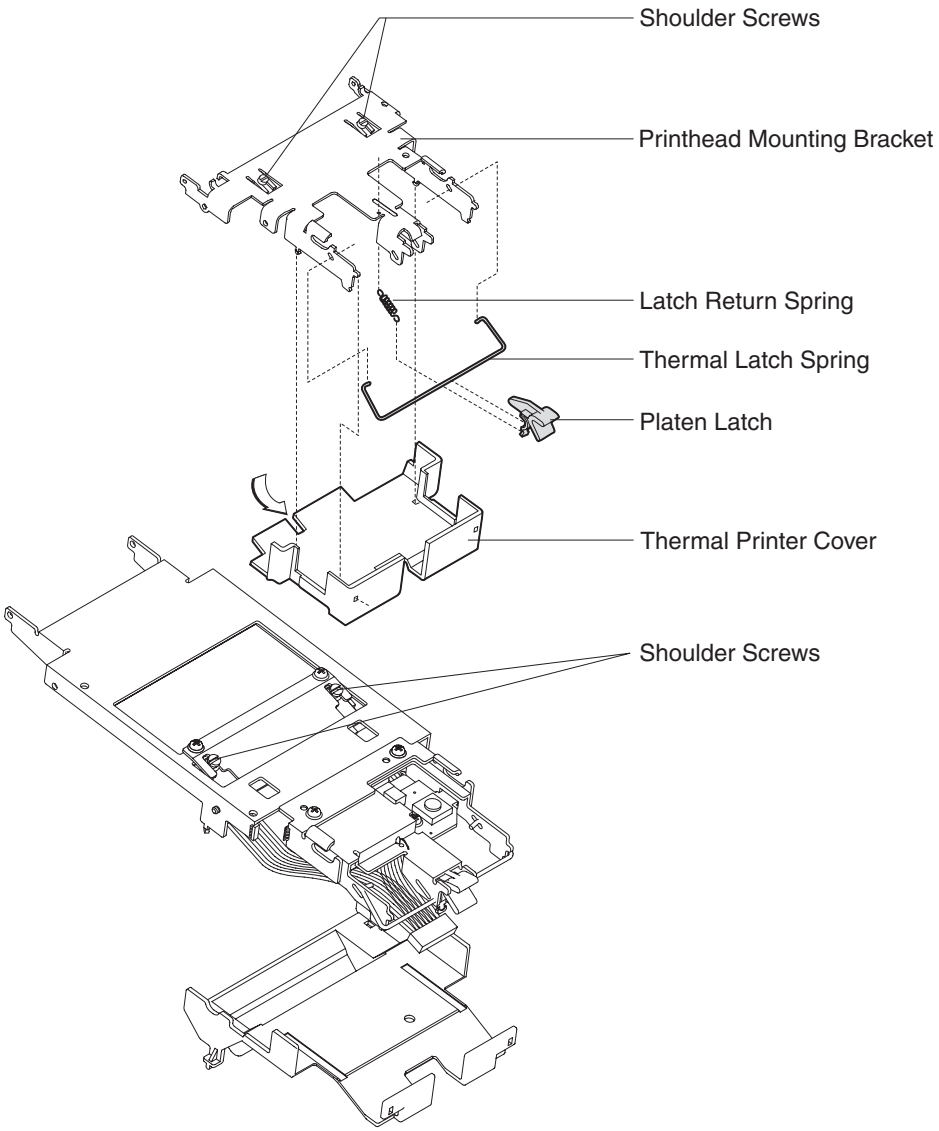

Figure 92. Thermal Printhead Adjustment

Thermal Paper Switch Adjustment

1. Loosen the bracket mounting screw until the switch and the bracket assembly slide smoothly into the switch mounting bracket slot. See Figure 93.
2. Slide the switch in the slot so that the switch is closest to the front of the printer and successively move the switch rearward until the printer passes the following test steps.
3. Test the printer by installing about 150 mm (6 in.) of paper and closing the cover. The blinking CR light should go to a steady state. If the light does not, press the CR paper feed button to advance the receipt paper a few inches. The printer ready LED should then go to a steady state.
4. With the paper cover still closed, feed the paper out of the printer. The printer ready LED should start to blink, indicating an out-of-paper condition.

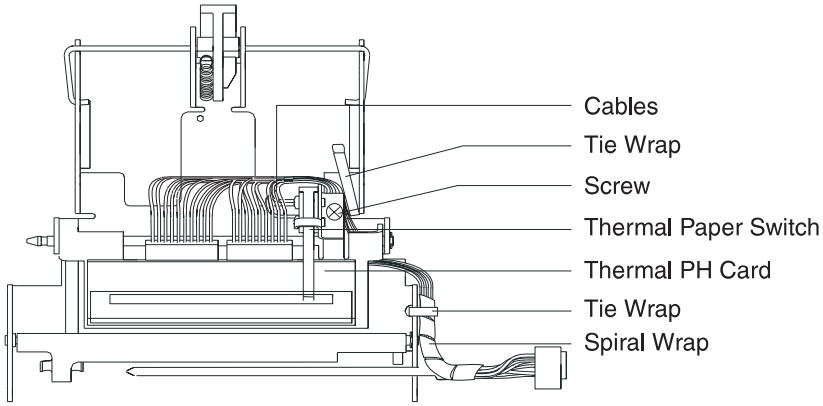

Figure 93. Thermal Paper Switch Adjustment

updated October 30, 2001

Document Sensor Threshold Reset

Set the document sensor threshold reset (adjustment), if the printer does not sense an inserted document.

To reset the sensor threshold values to the original default values:

1. Press and hold both buttons to enter offline mode.
2. While the printer is offline, open and close the customer receipt cover.

Chapter 5. Parts Listing

Assembly 1: Covers 120
Assembly 2: Operator Switch and Button Assembly 122
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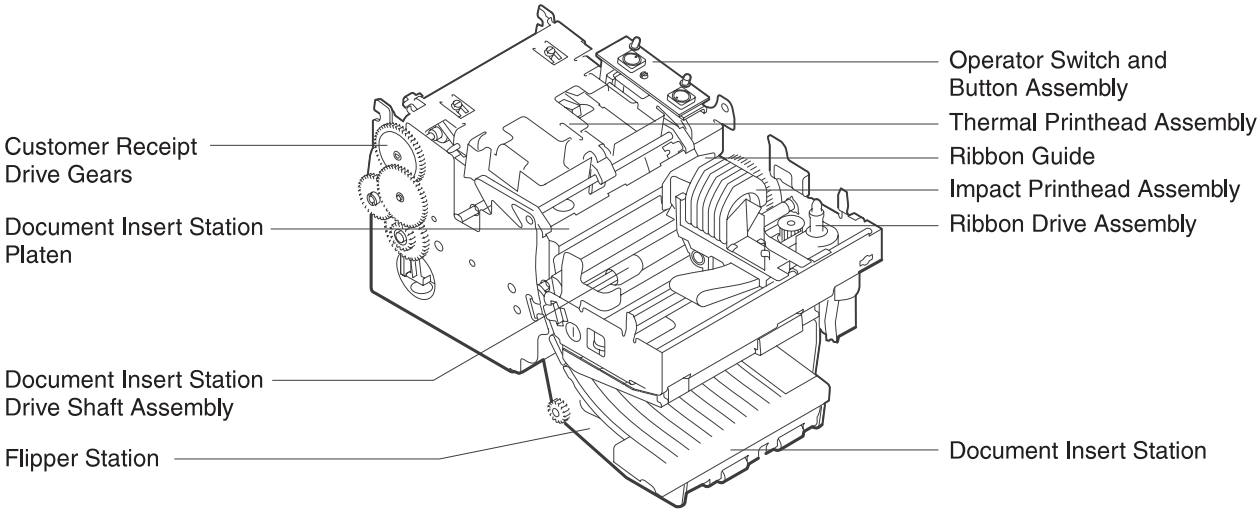
Assembly 4: Document Insert Station 126
Assembly 5: Thermal Printhead Assembly and Cover 128
Assembly 6: Printhead Transport and Ribbon Drive Assembly 130
Assembly 7: Impact Printhead Assembly 132
Assembly 8: Document Insert Station Platen and Lever 134
Assembly 9: Document Insert Drive Shaft Assembly 136
Assembly 10: Document Insert Station Gears and Motor 138
Assembly 11: Customer Receipt Drive, Cutter, and Platen 140
Assembly 12: Hardware Kits 142
Assembly 13: Cable Assemblies, Filler Panel, Power Supply 144



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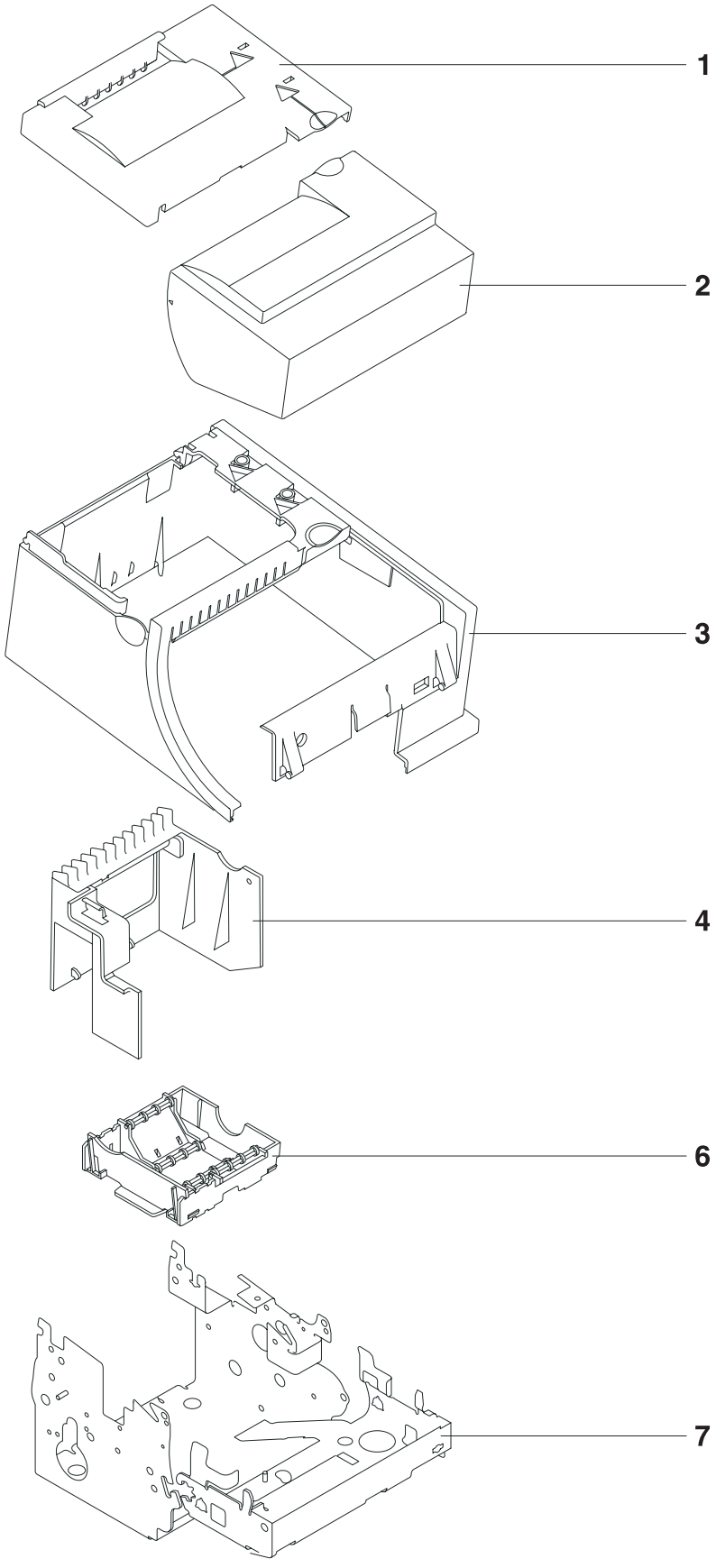
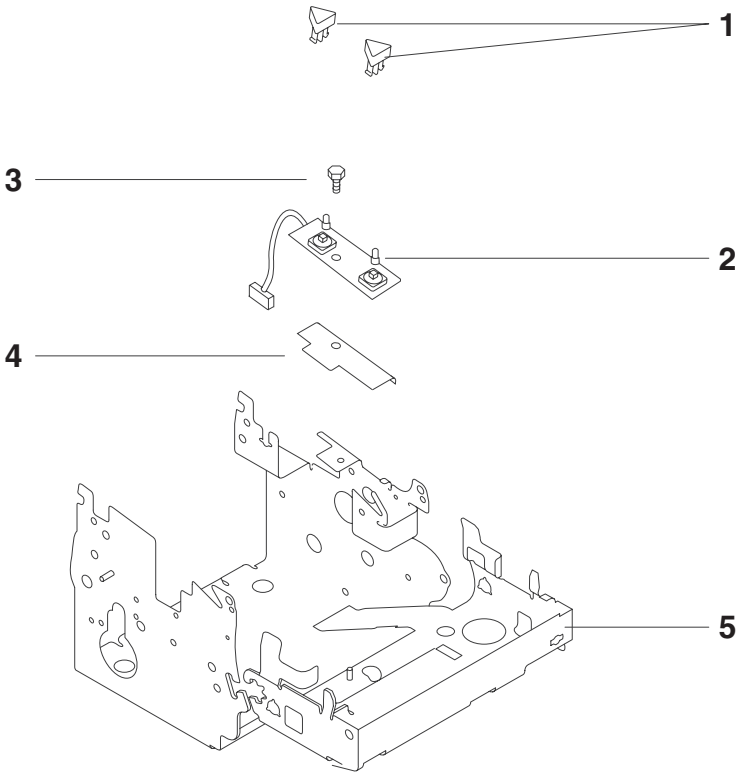
Assembly 1: Covers



Assembly 1: (continued)

Asm–Index	Part Number	Units	Description
1–1	42H1136	1	• Cover, Customer Receipt Paper (pearl white)
–1	10J1568	1	• Cover, Customer Receipt Paper (iron gray)
–2	42H1132	1	• Cover, Ribbon (pearl white)
–2	10J1573	1	• Cover, Ribbon (iron gray)
–3	42H1131	1	• Cover, Top (pearll white)
–3	10J1557	1	• Cover, Top (iron gray)
–4	42H1138	1	• Paper Guide, Customer Receipt (Thermal)
–6	42H1125	1	• Bucket, Paper, Customer Receipt
–7		NP	Frame
–	42H1182	1	SureMark Model TI1 (Total Printer)
–	42H1181	1	SureMark Model TI2 (Total Printer)
–	08L1855	1	SureMark Model TI3 with RS-485/RS-232 interface (512 Kb)
–	08L1856	1	SureMark Model TI4 with RS-485/RS-232 interface (512 Kb)
–	30L6430	1	SureMark Model TI3 with USB interface (512 Kb)
–	30L6431	1	SureMark Model TI4 with USB interface (512 Kb)
–	10J0518	1	SureMark Model TI3 with RS-485/RS-232 interface (2 Mb)
–	10J0519	1	SureMark Model TI4 with RS-485/RS-232 interface (2 Mb
–	10J1543	1	SureMark Model TG3 with RS-485/RS-232 interface (512 Kb)
–	10J1553	1	SureMark Model TG4 with RS-485/RS-232 interface (512 Kb)

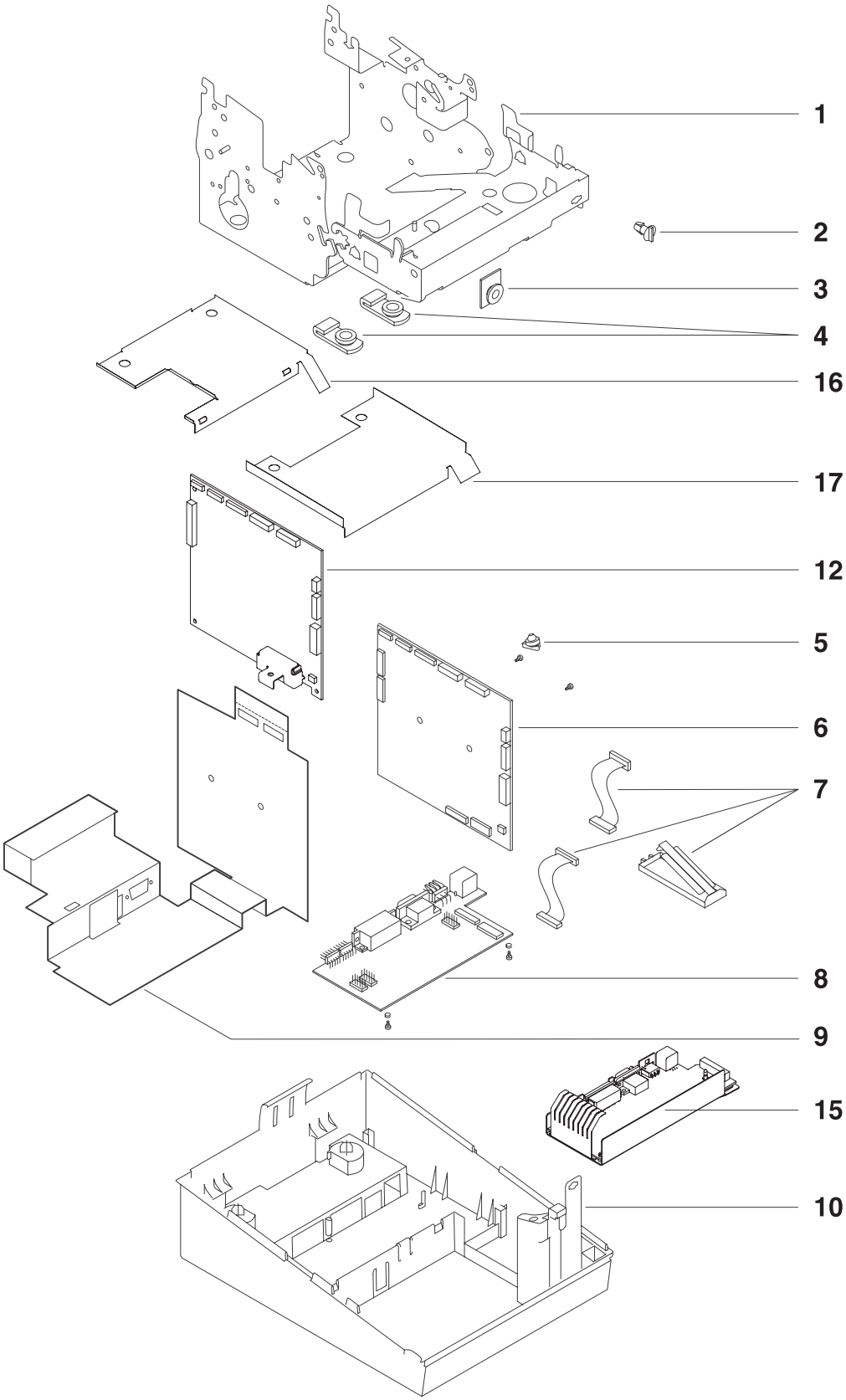
Assembly 2: Operator Switch and Button Assembly



Assembly 2: (continued)

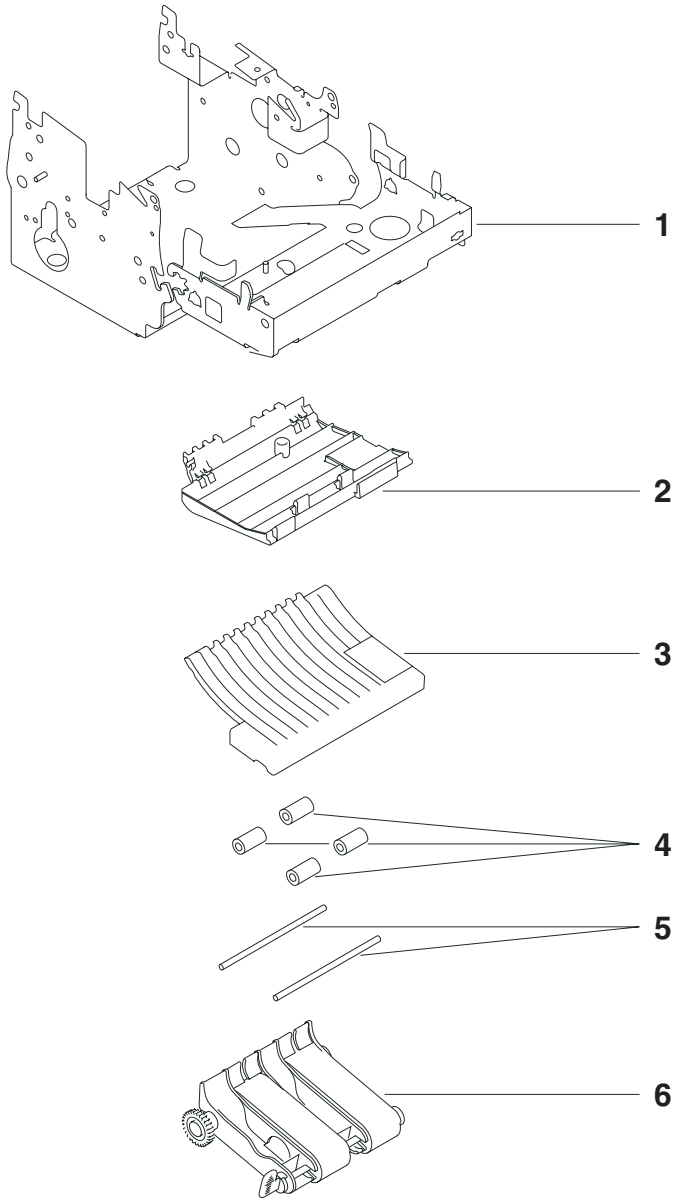
Asm–Index	Part Number	Units	Description
2–1	42H1139	2	• Button, Operator (2x)
–2	42H1135	1	• Switch Asm, Operator Includes Screw (Asm Index 2-3) and Insulator (Asm Index 2-4)
–3		NP	• • Screw (see kit 42H1063)
–4		NP	• • Insulator, Switch
–5		NP	Frame

Assembly 3: Logic Cards and Shock Mounts



Asm–Index	Part Number	Units	Description
3–1		NP	Frame
–	42H1140	1	• Kit, Shock Mounts (Includes Asm Index 3-2, 3-3, 3-4 , and 3-5)
–2		NP	• • Shock, Front, Mount
–3		NP	• • Shock, Front
–4		NP	• • Shock, Rear (X2)
–5		NP	• • Support, Front
–6	42H1141	1	• Card Asm, Main Logic (mates with 42H1142), Models TI1 and TI2
–7	42H1143	1	• Kit, Cables Includes Signal Cable, Power Cable, and Cable Clamp
–8	42H1142	1	• Card Asm, Interface (RS-232 and RS-485), Models TI1 and TI2
–9	42H1163	1	• Shield Asm, EMC (for use with 42H1141 and 42H1142) Includes Cable Clamp, Screws (4x), washer (2x), screw locks (2x), and lock washers (2x)
–10		NP	Cover, Base
–12	30L6446	1	Card Asm, Main Logic (mates with either 02L0816 or 02L0821), Models TI3, TI4, TG3, and TG4
–	10J0152	1	Card Asm, Main Logic (mates with 02L0816), Models TI3, TI4, TG3, and TG4 (with optional 2 Meg)
–15	02L0816	1	Card Asm, Interface (RS-232 and RS-485), Models TI3, TI4, TG3, and TG4 Includes trap door
–	02L0821	1	Card Asm, Interface (USB), Models TI3, TI4, TG3, and TG4 Includes trap door
–	02L0769	1	Spill Shield Includes Asm Index 3-16 and 3-17.
–16	30L6406	NP	Shield, Models TI3, TI4, TG3, and TG4
–17	42H1216	NP	Shield, Models TI1 and TI2

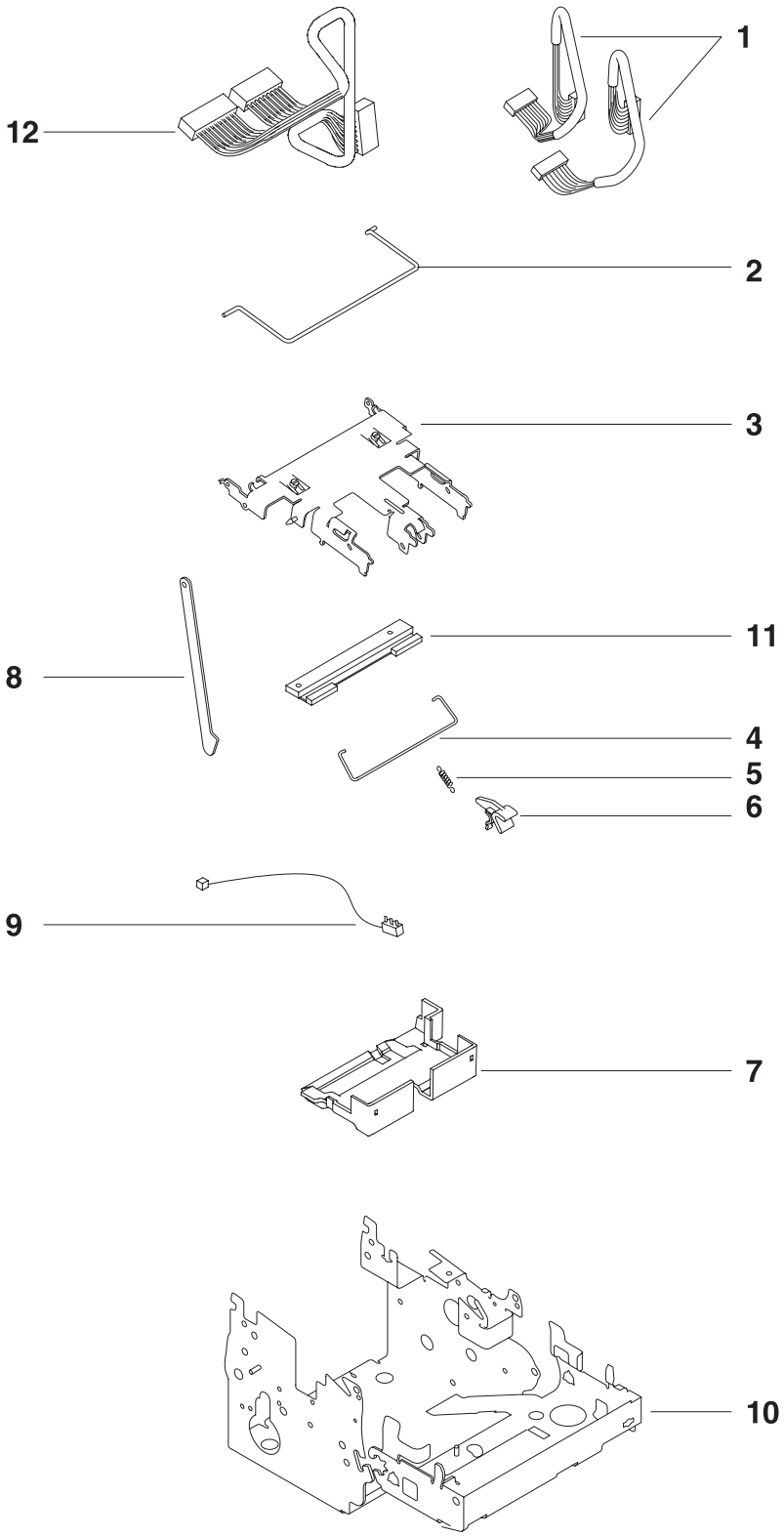
Assembly 4: Document Insert Station



Assembly 4: (continued)

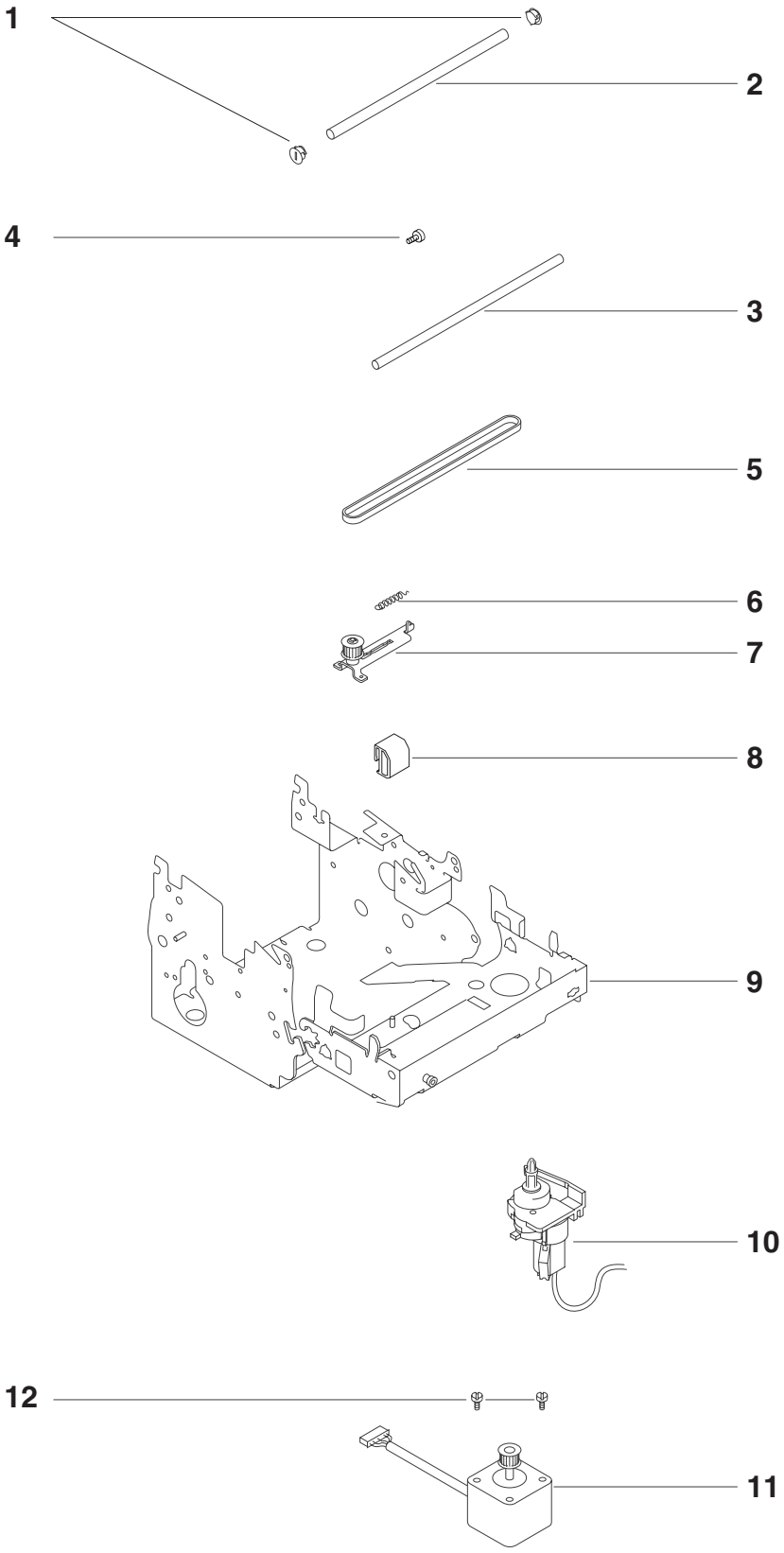
	Asm–Index	Part Number	Units	Description
	4–1		NP	Frame
	–2	42H1133	NP	DI Forms Entry, Upper (pearl white)
I	–2	10J1565	NP	DI Forms Entry, Upper (iron gray)
	–3	42H1115	1	• Flipper Cover (pearl white) (Models TI2 and TI4 Only), Includes Rollers (Asm Index 4-4) and roller shafts (Asm Index 4-5) See Assembly 9 for the DI Lower Forms Entry Cover for Models TI1 and TI3
I	–3	10J1588	1	• Flipper Cover (iron gray) (Models TG4 Only), Includes Rollers (Asm Index 4-4) and roller shafts (Asm Index 4-5) See Assembly 9 for the DI Lower Forms Entry Cover for Model TG3 only.
	–4		NP	• • Rollers (X4)
	–5		NP	• • Shaft, roller (X2)
	–6	42H1116	1	• Cartridge Asm, Flipper (Models TI2, TI4, and TG4 Only) Includes sample check (2x)

Assembly 5: Thermal Printhead Assembly and Cover



Asm–Index	Part Number	Units	Description
5–1	42H1056	1	• Kit, Cables, Thermal Printhead (Models TI1 and TI2) Includes Both Cables, Cable Tie, and Spiral Wrap.
–2	42H1137	1	• Hinge Includes Asm Index 5-4, 5-5, and 5-6.
–3	30L6441		• Thermal Printhead Assembly, High Speed (Models TI3, TI4, TG3, and TG4)
–3	42H1122	1	• Thermal Printhead Assembly (Models TI1 and TI2) Includes Asm Index 5-4, 5-5, 5-6, 5-11, and additional non-illustrated parts.
–	42H1059	1	• • Thermal Latch Asm.
–4		NP	• • Spring, Thermal
–5		NP	• • Spring, Latch Return
–6		NP	• • Latch, Platen
–7	42H1180	1	• Cover, Thermal Printhead Includes Label.
–8	42H1129	1	• Drag Strip Includes E-clip
–9	42H1128	1	• Sensor, Thermal Paper Includes Screws and Mounting Bracket.
–10		NP	Frame
–11	42H1262		Thermal Printhead FRU (Models TI1 and TI2)
–11	08L1843		Thermal Printhead FRU, High Speed (Models TI3, TI4, TG3, and TG4)
–12	30L6442		Cable, Thermal, High Speed (Models TI3, TI4, TG3, and TG4)

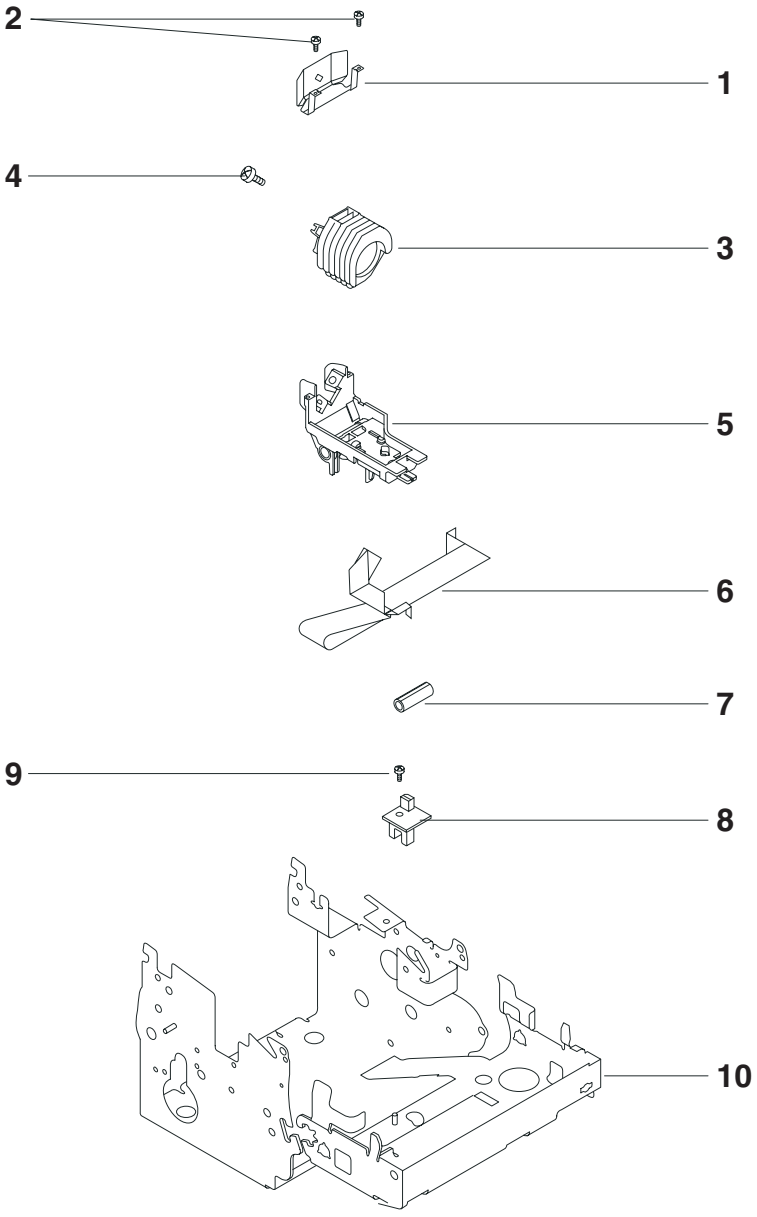
Assembly 6: Printhead Transport and Ribbon Drive Assembly



Assembly 6: (continued)

Asm–Index	Part Number	Units	Description
6–1	42H1107	1	• Bushing, Gap Adjust (2X)
–2	42H1106	1	• Shaft, Transport, Rear Includes Gap Adjust Bushings (Asm Index 6-1)
–3	42H1044	1	• Shaft, Transport, Front Includes Screw (Asm Index 6-4)
–4		NP	• • Screw (see kit 42H1063)
–5	42H1110	1	• Belt, Timing
–6	42H1109	1	• Spring, Tensioner
–7	42H1108	1	• Tensioner Asm. Includes Tension Spring (Asm Index 6-6)
–8	42H1145	1	• Spacer, Printhead
–9		NP	Frame
–10	42H1114	1	• Ribbon Drive Asm.
–11	42H1045	1	• Motor, Transport Includes Screws (Asm Index 6-12)
–12		1	• • Screws (2X) See Hardware Kit, 42H1063, Miscellaneous Fasteners.)

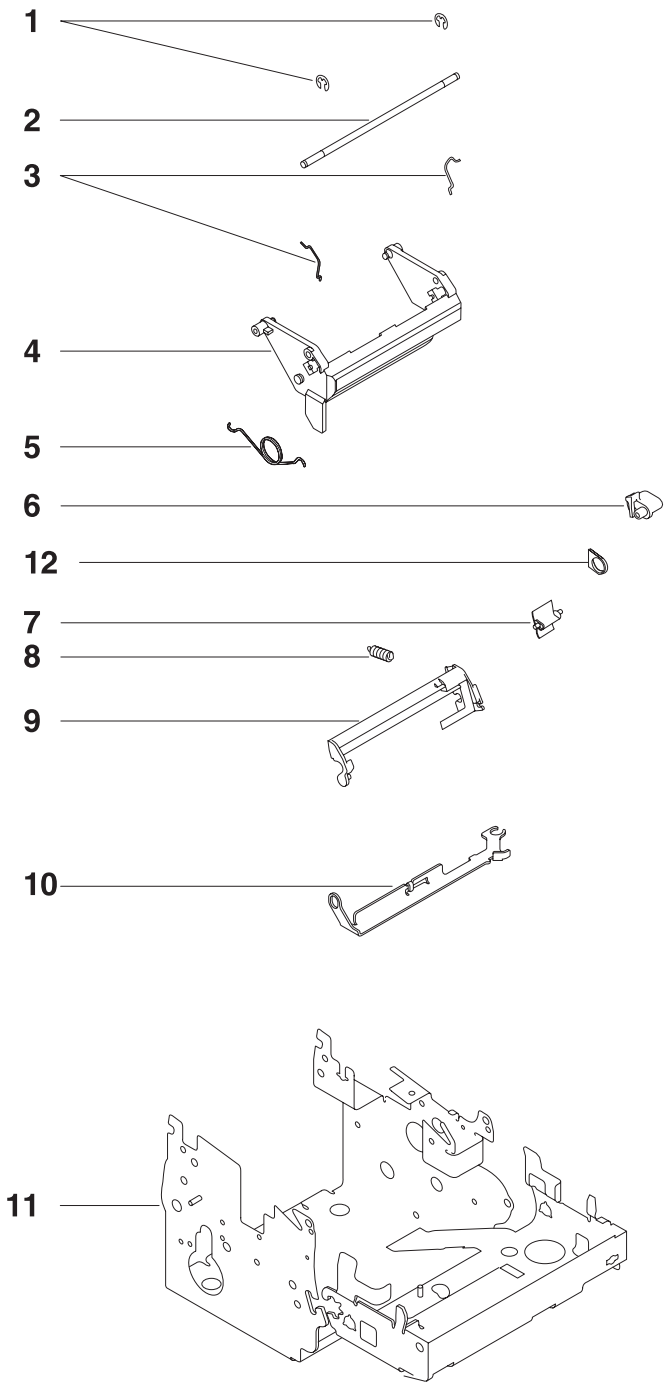
Assembly 7: Impact Printhead Assembly



Assembly 7: (continued)

Asm–Index	Part Number	Units	Description
7–1	42H1047	1	• Guide, Ribbon Includes Screws (Asm Index 7-2)
–2		NP	• • Screws (2X) Part of Hardware Kit, 42H1063, Miscellaneous Fasteners.
–3	42H1046	1	• Printhead Asm, Impact Includes Printhead, Screw (Asm Index 7-4), Printhead Gap Gage
–4		NP	• • Screw (see kit 42H1063)
–5	42H1112	1	• Carriage Asm.
–6	42H1111	1	• Cable, Printhead
–7	42H1113	1	• Bearing, Carrier, Front
–8	42H1048	1	• Sensor, Home Includes Screw (Asm Index 7-9)
–9		NP	• • Screw Also part of Hardware Kit, 42H1063, Miscellaneous Fasteners.
–10		NP	Frame
–	42H1190	1	Printhead Gap Gage

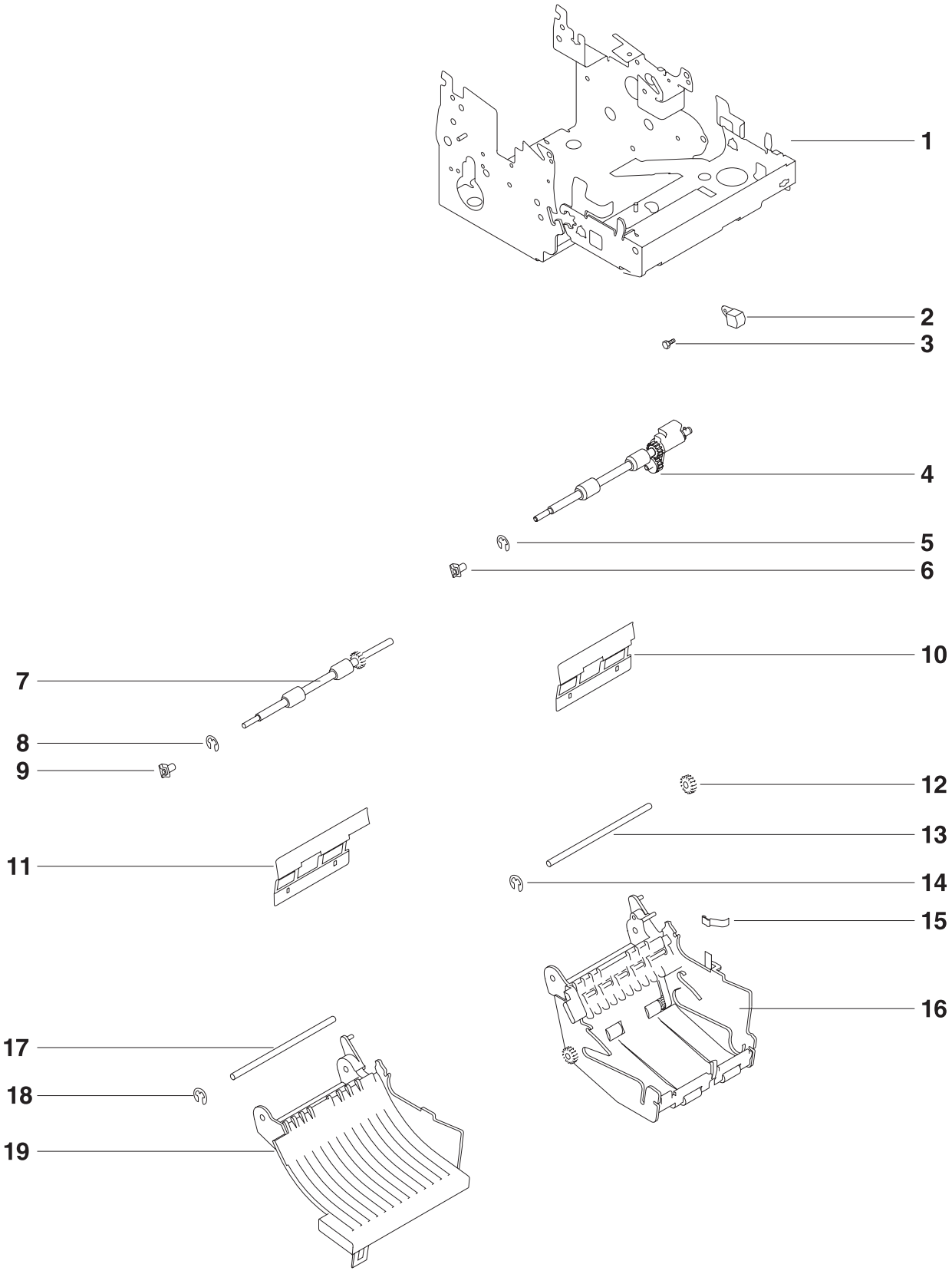
Assembly 8: Document Insert Station Platen and Lever



Assembly 8: (continued)

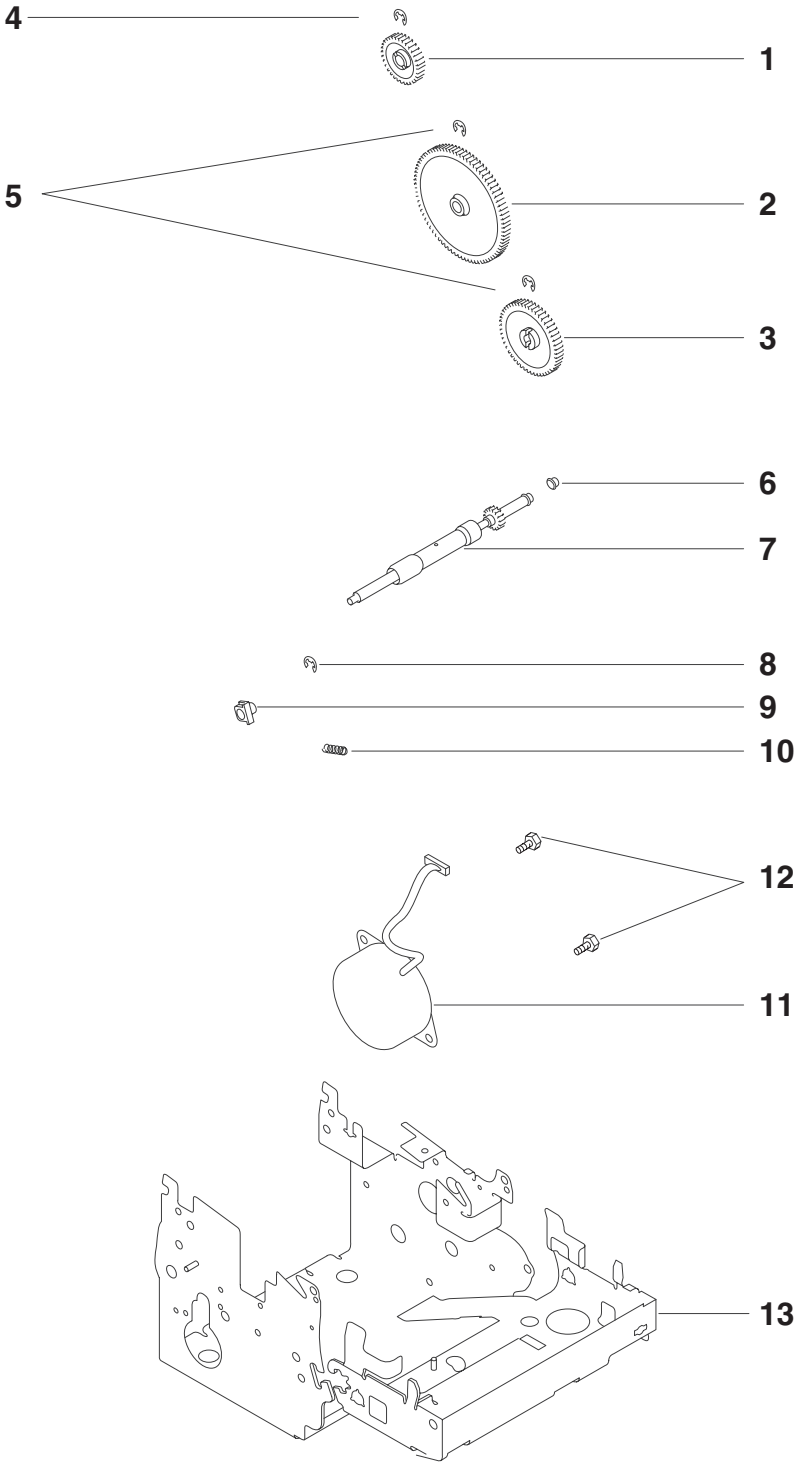
Asm–Index	Part Number	Units	Description
8–	42H1062	1	• Platen Asm, DI Station Includes Asm Index 8-1, 8-2, 8-3, 8-4, and 8-5.
–1		NP	• • E-Clips (2X) (part of 42H1063)
–2		NP	• • Shaft, Platen
–3		NP	• • Spring, Clip (2X) (part of 42H1144)
–4		NP	• • Platen
–5		NP	• • Spring, Platen (part of 42H1144)
–	42H1051	1	• Pressure Pad Asm. Includes Asm Index 8-6, 8-7, and Sample Checks
–	42H1052	1	• DI Sensor Asm. Includes Asm Index 8-6, 8-7, 8-8, 8-9, and Sample Checks
–6		NP	• • Holder, Pressure Pad
–7		NP	• • Pressure Pad
–8		NP	• • Spring, Sensor (part of 42H1144)
–9		NP	• • Sensor, DI Upper/Lower
–12		NP	• • Wear Plate
–10	42H1121	1	• DI Lever Asm Includes Bushing, E-clip, DI Lever
–11		NP	Frame

Assembly 9: Document Insert Drive Shaft Assembly



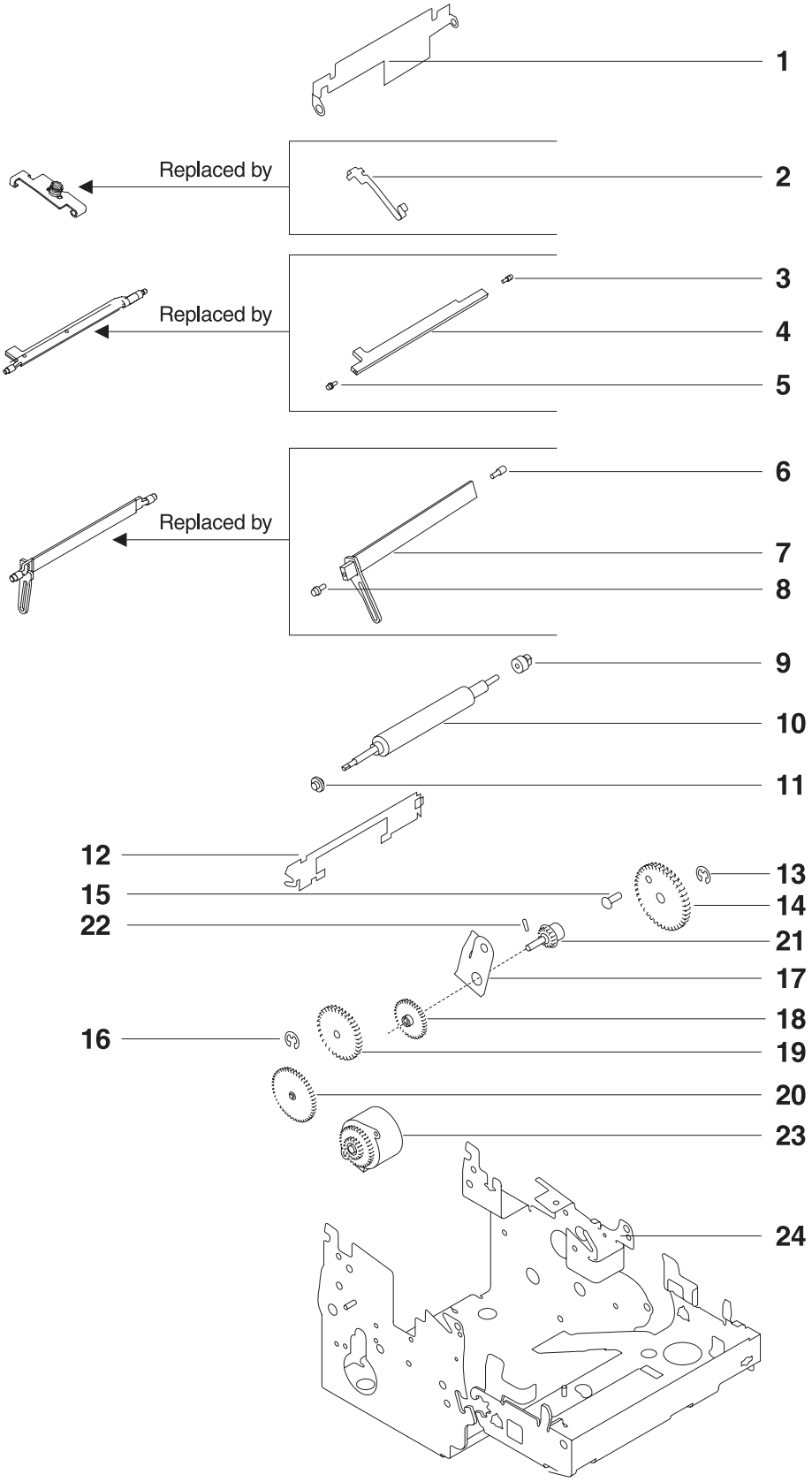
Asm–Index	Part Number	Units	Description
9–1		NP	Frame
–2	38H7504	1	• Read Head, MICR (Model TI2, TI4, and TG4 Only) Includes Screw (Asm Index 9-3) and Sample Check (2x)
–3		NP	• • Screw (part of 42H1063)
–	42H1057	1	• DI Feedroller Asm. (Model TI2, TI4, and TG4 Only) Includes Asm Index 9-4, 9-5, and 9-6.
–4		NP	• • DI Feedroller (Model TI2, TI4, and TG4 Only)
–5		NP	• • E-Clip (part of 42H1063)
–6		NP	• • Bearing, Feed, Left
–	42H1119	1	• DI Feedroller Asm. (Model TI1, TI3, and TG3 Only) Includes Asm Index 9-7, 9-8, and 9-9.
–7		NP	• • DI Feedroller (Model TI1, TI3, and TG3 Only)
–8		NP	• • E-Clip (part of 42H1063)
–9		NP	• • Bearing, Feed, Left
–10	42H1117	1	• Bail, (Model TI2, TI4, and TG4)
–11	42H1118	1	• Bail, (Model TI1, TI3, and TG3)
–	42H1050	1	• Flipper Asm, DI lower Forms Entry (Model TI2, TI4, and TG4) Includes Asm Index 9-12, 9-13, 9-14, 9-15, 9-16, Drive Belt, Toggle Lever, Toggle Spring, Roller Shaft, Roller Spring, Roller (2x), Lower Gate, Gate Spring, Upper Gate, Gate Shaft, Support Shaft, C-Clip (2x), Flipper Frame, Flipper Drive Gear, Sample Check (2x)
I –	10J1599	1	• Flipper Asm, DI lower Forms Entry (Model TG4 Only) (iron gray) Includes Asm Index 9-12, 9-13, 9-14, 9-15, 9-16, Drive Belt, Toggle Lever, Toggle Spring, Roller Shaft, Roller Spring, Roller (2x), Lower Gate, Gate Spring, Upper Gate, Gate Shaft, Support Shaft, C-Clip (2x), Flipper Frame, Flipper Drive Gear, Sample Check (2x)
–12		NP	• • Gear, Drive
–13		NP	• • Shaft, Drive
–14		NP	• • E-Clip (2x) Part of Hardware Kit, 42H1063, Miscellaneous Fasteners.
–15		NP	• • Clip, Toggle Actuator (Also part of Hardware Kit, 42H1144, Miscellaneous Springs.)
–16		NP	• • Flipper Sub. Asm. (Model TI2 and TI4 Only) (pearl white)
–	42H1134	1	• DI Lower Forms Entry (Model TI1 and TI3 Only) (pearl white) Includes Asm Index 9-17, 9-18, and 9-19.
I –	10J1579	1	• DI Lower Forms Entry (Model TG3 Only) (iron gray) Includes Asm Index 9-17, 9-18, and 9-19.
–17		NP	• • Shaft
–18		NP	• • E-Clip (2x) Part of Hardware Kit, 42H1063, Miscellaneous Fasteners.
–19		NP	• • Frame, Lower Forms Entry (Model TI1 and TI3 Only) (pearl white)
–	73G2601	1	Sample Check (2x)

Assembly 10: Document Insert Station Gears and Motor



Asm–Index	Part Number	Units	Description
10–	42H1053	1	• Kit, DI Gears Includes Asm Index 10-1, 10-2, 10-3, 10-4, and 10-5
–1		NP	• • Gear, Motor
–2		NP	• • Gear, Idler
–3		NP	• • Gear, Shaft
–4		NP	• • E-Clip (Also part of Hardware Kit, 42H1063, Miscellaneous Fasteners.)
–5		NP	• • E-Clip (X2) (Also part of Hardware Kit, 42H1063, Miscellaneous Fasteners.)
–	42H1058	1	• DI Backup Roll Shaft Asm Includes Asm Index 10-6, 10-7, 10-8, and 10-9, and 10-10
–6		NP	• • Right Shaft Bearing
–7		NP	• • DI Back-up Roller
–8		NP	• • E-Clip (Also part of Hardware Kit, 42H1063, Miscellaneous Fasteners.)
–9		NP	• • Bearing, Shaft Eccentric
–8		NP	• • Left Shaft Bearing -->
–10		NP	• • Spring (Also part of Hardware Kit, 42H1144, Miscellaneous Springs.)
–11	42H1120	1	• Motor, DI Feed Includes screws
–12		NP	• • Screws (2X) (Also part of Hardware Kit, 42H1063, Miscellaneous Fasteners.)
–13		NP	Frame

Assembly 11: Customer Receipt Drive, Cutter, and Platen



Asm–Index	Part Number	Units	Description
11–	42H1065	1	• Thermal Cutter Asm Includes Asm Index 11-1, 11-2, 11-3, 11-4, 11-5, 11-6, 11-7, 11-8, and lubricant
–1		NP	• • Guide, Thermal (also part of 42H1164)
–2		NP	• • Spring, Leaf or Lever/Spring
–3		NP	• • Stud
–4		NP	• • Blade, Stationary or Blade Asm, Stationary
–5		NP	• • Pin
–6		NP	• • Stud, Cutter
–7		NP	• • Blade Asm, Rotating
–8		NP	• • Pin
–		NP	• • E-clip Part of Hardware Kit, 42H1063, Miscellaneous Fasteners.
–		NP	• • E-clip Stationary Blade Part of Hardware Kit, 42H1063, Miscellaneous Fasteners.
–		NP	• • Lubricant
–	42H1123	1	• Platen Asm, Thermal (Models TI1 and TI2) Includes Asm Index 11-9, 11-10, and 11-11.
–	30L6443	1	• Platen Asm, Thermal (Models TI3, TI4, TG3, and TG4) Includes Asm Index 11-9, 11-10, and 11-11.
–9		NP	• • Bearings, Thermal, Right
–10		NP	• • Platen, Thermal
–11		NP	• • Bearings, Thermal, Left
–12	42H1164	1	• Stripper
–	42H1060	1	• Kit, CR Cutter Gears Includes Asm Index 11-13, 11-14, 11-15, 11-16, 11-17, 11-18, 11-19, and 11-20.
–13		NP	• • E-Clip Part of Hardware Kit, 42H1063, Miscellaneous Fasteners.
–14		NP	• • Gear, Pin
–15		NP	• • Pin, Lever Drive
–16		NP	• • E-Clip Part of Hardware Kit, 42H1063, Miscellaneous Fasteners.
–17		NP	• • Spring, Cutter Stop
–18		NP	• • Gear, Cutter
–19		NP	• • Gear, Thermal Feed
–20		NP	• • Gear, Thermal Idler
–22		NP	• • Spiral Pin
–21	42H1130	1	• Clutch Asm, Cutter (Models TI1 and TI2) Includes Spiral Pin (Asm Index 11-22).
–21	30L6445	1	• Clutch Asm, Cutter (Models TI3, TI4, TG3, and TG4) Includes Spiral Pin (Asm Index 11-22).
–23	42H1124	1	• Motor, CR (Models TI1 and TI2) Includes Screws (2x)
–23	30L6444	1	• Motor, CR (Models TI3, TI4, TG3, and TG4) Includes Screws (2x)
–24		NP	Frame

Assembly 12: Hardware Kits

Asm–Index	Part Number	Units	Description
12–1	42H1063	1	• Kit, Miscellaneous Fasteners which contains the following parts:
–			• • Washer (2X)
–			• • Nut, Hex, Transport, M3 (9X)
–			• • Screw, M3X14
–			• • Screw, Motor (3X)
–			• • Screw, Shoulder (2X)
–			• • Screw, Ribbon Shield (2X)
–			• • Plug, Front Shock
–			• • Stud, Front Shock
–			• • Clip (4X)
–			• • Clip
–			• • Tie, Cable (2X)
–			• • Clamp, Cable
–			• • Screw (2X)
–			• • Washer(1X)
–			• • Screw (M3)
–			• • Nut, M3 (2X)
–			• • Washer, Lock (3X)
–			• • Clip (3X)
–			• • Screw, Lock (2X)
–			• • Screw (4X)
–			• • Washer, Lock (2X)
–			• • Clip (4X)
–			• • Washer
–			• • Clip (6X)
–2	42H1144	1	• Kit, Miscellaneous Springs which contains the following parts:
–			• • Spring, Tensioner
–			• • Spring Toggle
–			• • Spring, Sensor
–			• • Actuator, Toggle
–			• • Spring, Thermal Head
–			• • Spring, DI
–			• • Spring, Platen
–			• • Spring, Ribbon Drive
–			• • Spring, Cutter Clutch
–			• • Spring, Cutter Stop
–			• • Spring, Gate
–			• • Spring, Thermal Latch
–			• • Spring, Latch Return

Assembly 13: Cable Assemblies, Filler Panel, Power Supply

Asm–Index	Part Number	Units	Description
13–1	42H1143	1	Cables, Logic Card Includes Signal Cable, Power Cable, and Cable Clamp.
–2	42H1056	1	Cables, Thermal Printhead Includes Both Cables, Cable Tie, and Spiral Wrap.
–3	42H1111	1	Cable Asm, Impact Printhead
–4	42H1157	1	Filler Panel
–5	72H3802	1	Cash Drawer Cable, Short
–6	72H3803	1	Cash Drawer Cable, Long
–7	86H2192	1	Cable, RS-232 Interface, 2 m
–8	86H2195	1	Cable, RS-232 Interface, 4 m
–9	42H1176	1	Power Supply, RS-232 Attached Only
–10	08L2014	1	Standard USB cable, 5 m
–11	01L1647	1	Distributed USB cable, 3.8M
–12	01L1646	1	Integrated USB cable, 0.5 m

Chapter 6. Operation

Operating Controls and Indicators 147
Check Verification and Printing 147
Ribbon Loading 151
Paper Loading 153
Clearing Jams in the Check Flipper Area 155
MICR Reader Read Head Cleaning 157
Thermal Printhead Cleaning 158

Note: All covers ***must*** be installed on the SureMark printer during operation.

Operating Controls and Indicators

See “Indicators, Controls, and Stations – Thermal/Impact Printers” on page 3 for operating controls and indicators.

Check Verification and Printing

The Model TI2, TI4, and TG4 printers are capable of printing verification information on a check and printing information on an inserted document. Figure 94 on page 148 shows the correct positioning of the check in a printer. It also shows how to side load a document to align it exactly where you want it to be printed.

Attention: Do not pull the receipt paper out of the printer with the paper access cover closed. Doing that will disengage the paper feed and the paper feed motor must catch up before the printer can feed the paper. The result will be missing lines or partial lines of print. Use the Customer Receipt Feed button to advance the receipt and all lines will be printed.

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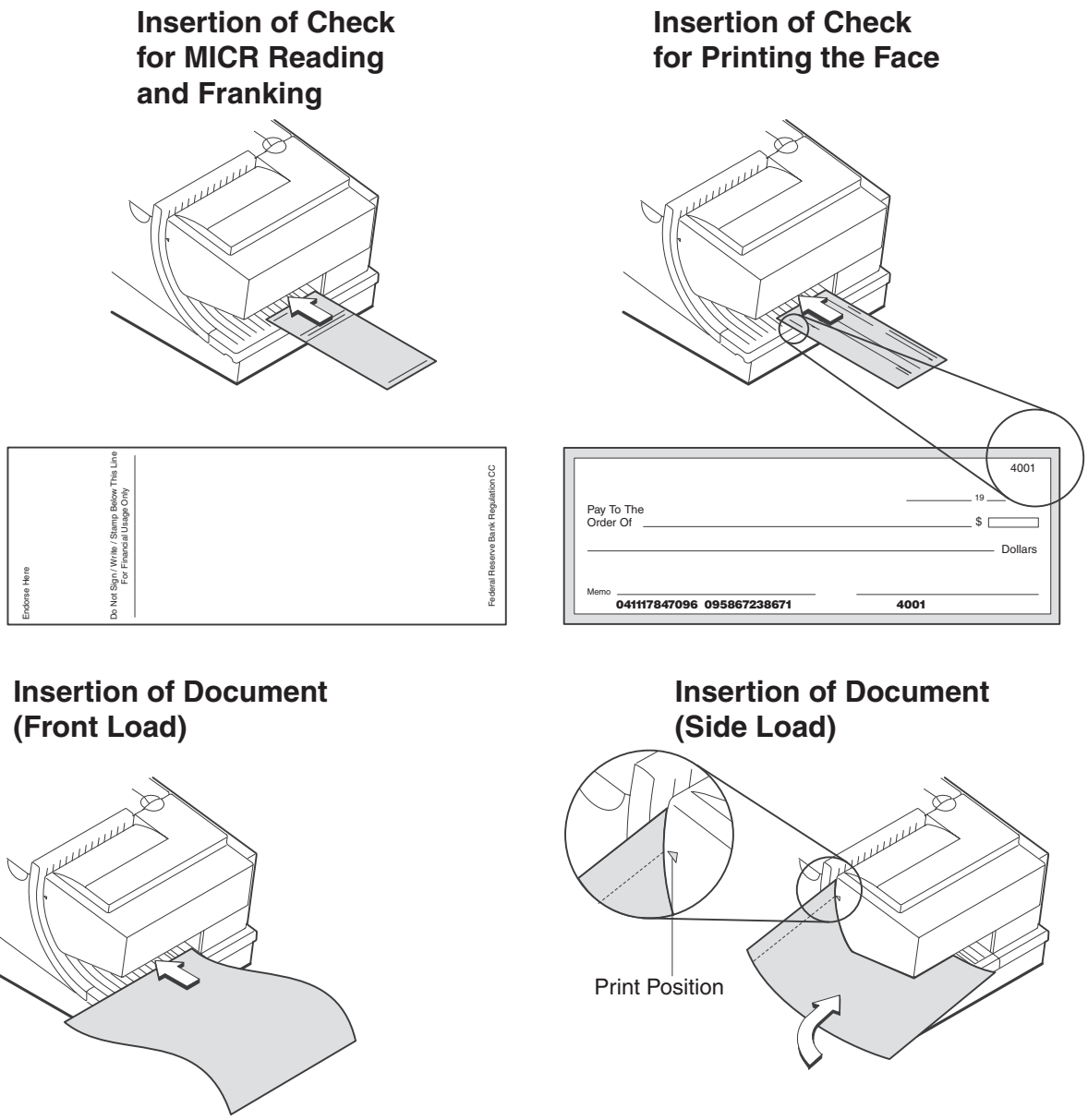

Figure 94. Positioning Checks and Documents for Reading and Printing in a Model TI2, TI4, or TG4 Printer

Figure 95 and Figure 96 on page 150 show the printable area on an inserted document for both portrait and landscape.

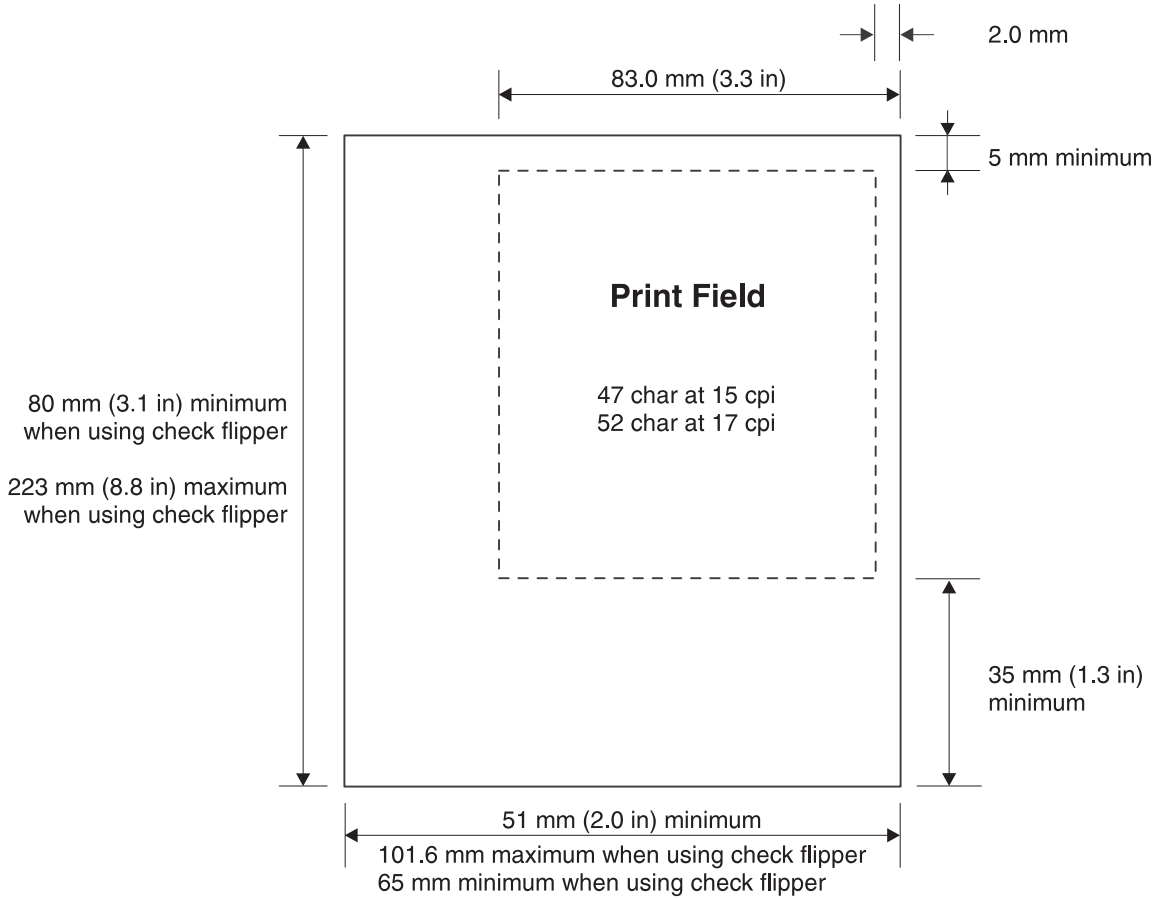
2.0 mm
83.0 mm (3.3 in)
5 mm minimum
Print Field
47 char at 15 cpi
52 char at 17 cpi
80 mm (3.1 in) minimum
when using check flipper
223 mm (8.8 in) maximum
when using check flipper
35 mm (1.3 in)
minimum
51 mm (2.0 in) minimum
101.6 mm maximum when using check flipper
65 mm minimum when using check flipper

Figure 95. Printable Area of an Inserted Document (Portrait)

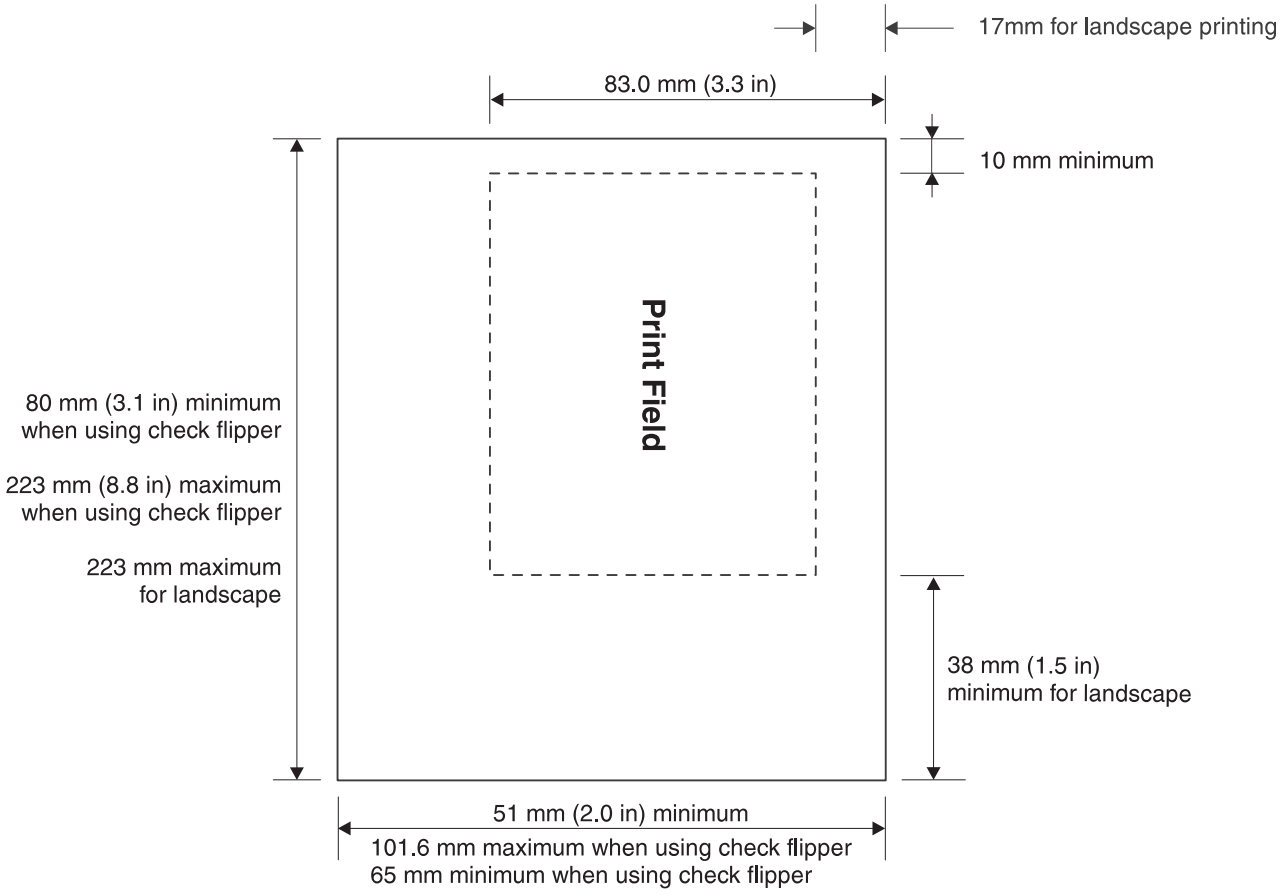
17mm for landscape printing
83.0 mm (3.3 in)
10 mm minimum
Print Field
80 mm (3.1 in) minimum
when using check flipper
223 mm (8.8 in) maximum
when using check flipper
223 mm maximum
for landscape
38 mm (1.5 in)
minimum for landscape
51 mm (2.0 in) minimum
101.6 mm maximum when using check flipper
65 mm minimum when using check flipper

Figure 96. Printable Area of an Inserted Document (Landscape)

Ribbon Loading

1. Open the ribbon cover. As the cover is opened, the printhead moves to a position where you can easily load a ribbon.

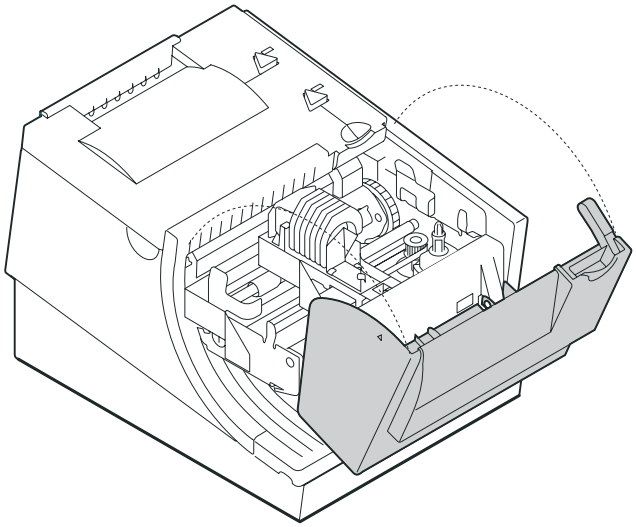

Figure 97. Opening the Ribbon Cover

2. If there is already a ribbon cartridge installed, remove it by lifting it straight up.

   Note: You might need to grab the body of the cartridge rather then the top to remove.

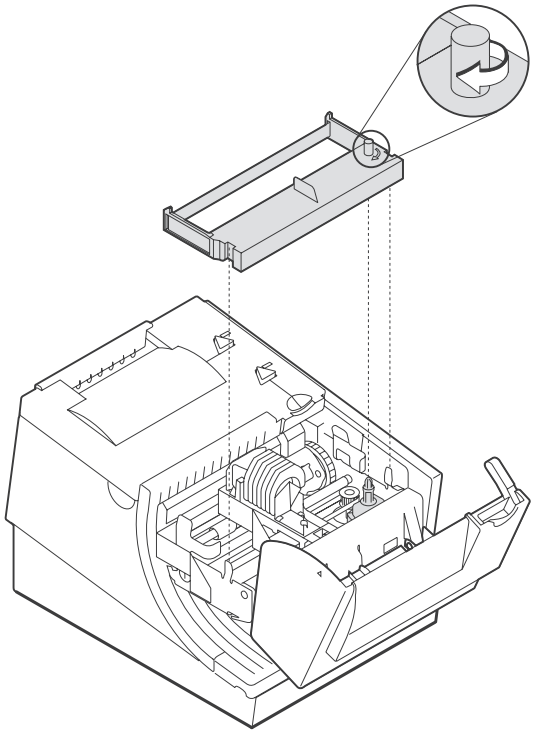

Figure 98. Ribbon Cartridge Loading

3. Maintain ribbon tension by turning the ribbon cartridge knob as shown in Figure 98 on page 151. Lower the cartridge into position until notches on its sides snap into place on the printer guides. After the cartridge is in place, turn the knob until the ribbon slides into place between the printhead and the ribbon shield. See Figure 99 for correct ribbon positioning.

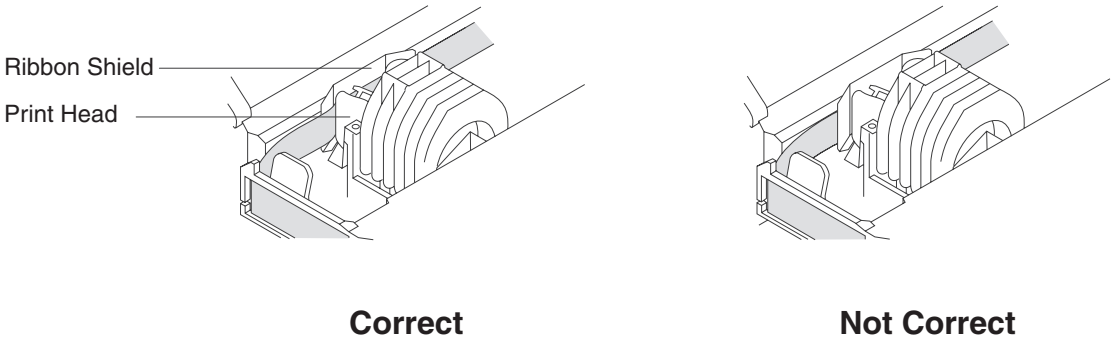

Figure 99. Ribbon Path around the Printhead

4. Close the ribbon cover.

Paper Loading

1. Open the paper cover.
2. If there is any unused paper or if there is an empty paper roll core in the paper roll bucket inside the printer, remove it before inserting a new paper roll. You can throw the core in the trash can.

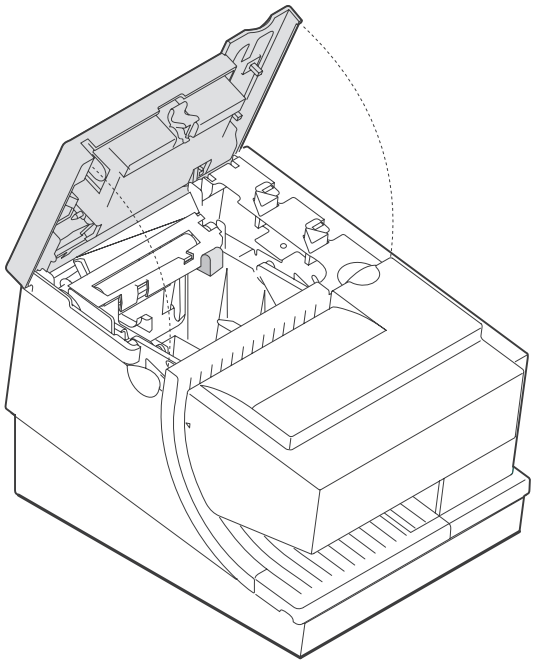

Figure 100. Paper Cover

Note: Refer to the label on the inside of the paper cover for a diagram of how to load paper.

3. Place the paper roll into the paper roll bucket as shown in Figure 101 on page 154. The leading edge of the paper should come from the direction of the front of the printer and go across the top of the roll as shown in the diagram. If it feeds from the bottom of the roll, you will have print problems.

Note: The thermal printhead will not print on paper with glue on it. If the new paper roll was sealed by glue, tear off the 15 to 20 cm (6 to 8 in.) of paper with glue on it before loading it. Or, you can advance the paper after loading to get rid of the glued paper.

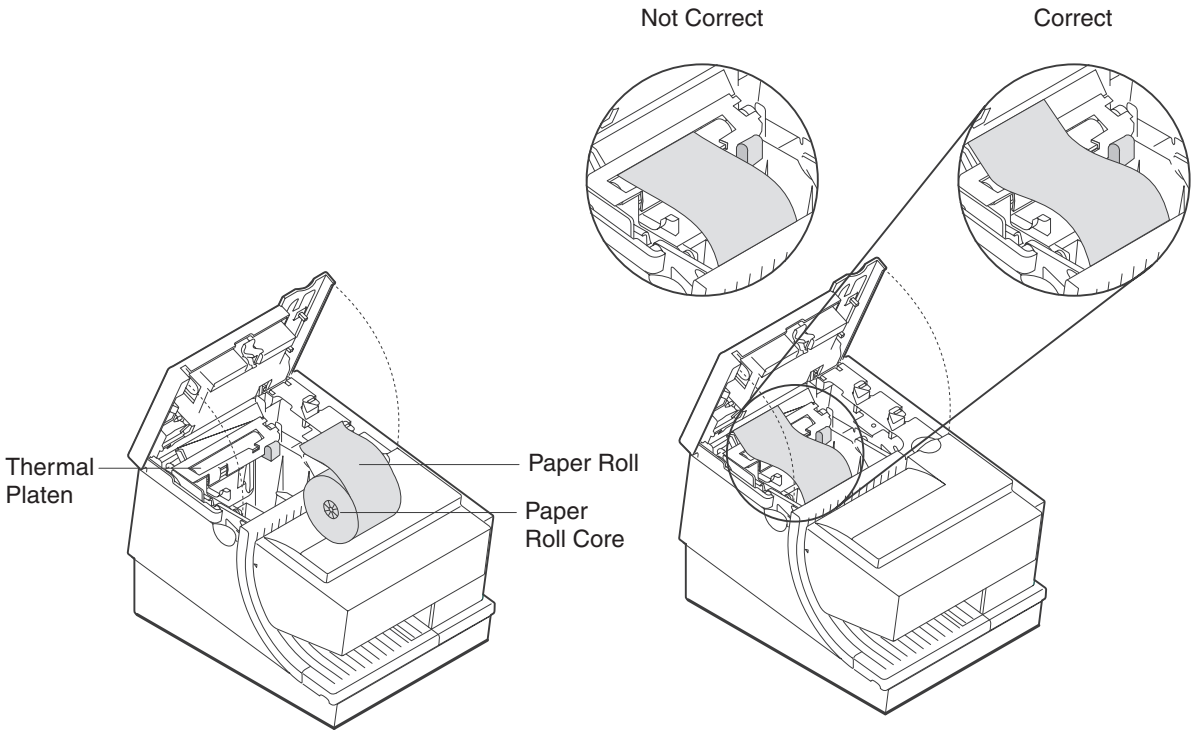

Figure 101. Paper Loading Path

4. Place the leading edge of the paper over the metal guide. (See Figure 101.)
5. Close the paper cover.
6. Press the Customer Receipt Feed button to advance the paper to verify that the paper is feeding correctly. Feed 30 cm (about 1 ft) of paper through to test for correct alignment.

Clearing Jams in the Check Flipper Area

This procedure is for the SureMark Model TI2, TI4, and TG4 printers (MICR reader and check flipper features) only.

If a check jams in the check flipper mechanism:

1. Lift up the left front corner of the lower document insert cover and pull the cover from the printer. (See Figure 102.)
2. The action you take in this step depends on whether the document is visible and can be removed:
   - If you can remove the document:
     a. Remove the document.
     b. Replace the lower document insert cover.
     c. You are finished with this procedure.
   - If you cannot remove the document, continue with step 3.

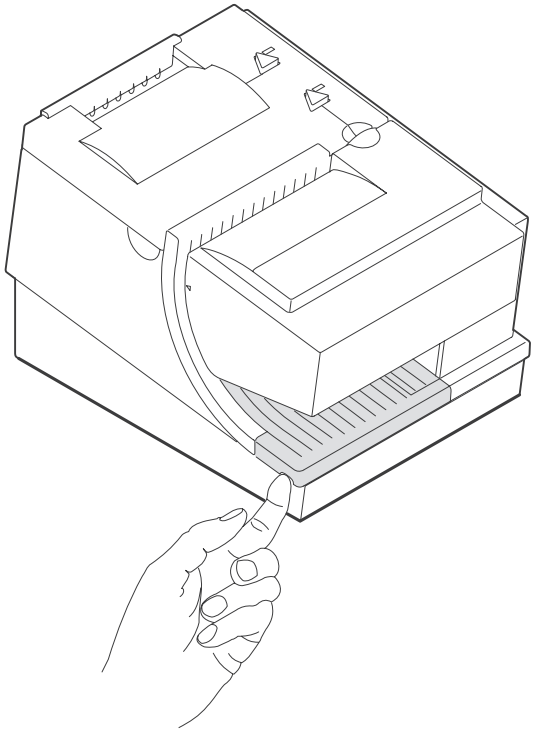

Figure 102. Removing the Lower Document Insert (DI) Cover

3. Lift up the tab on the left side of the check flipper cartridge and remove the assembly from the printer. (See Figure 103 on page 156.)

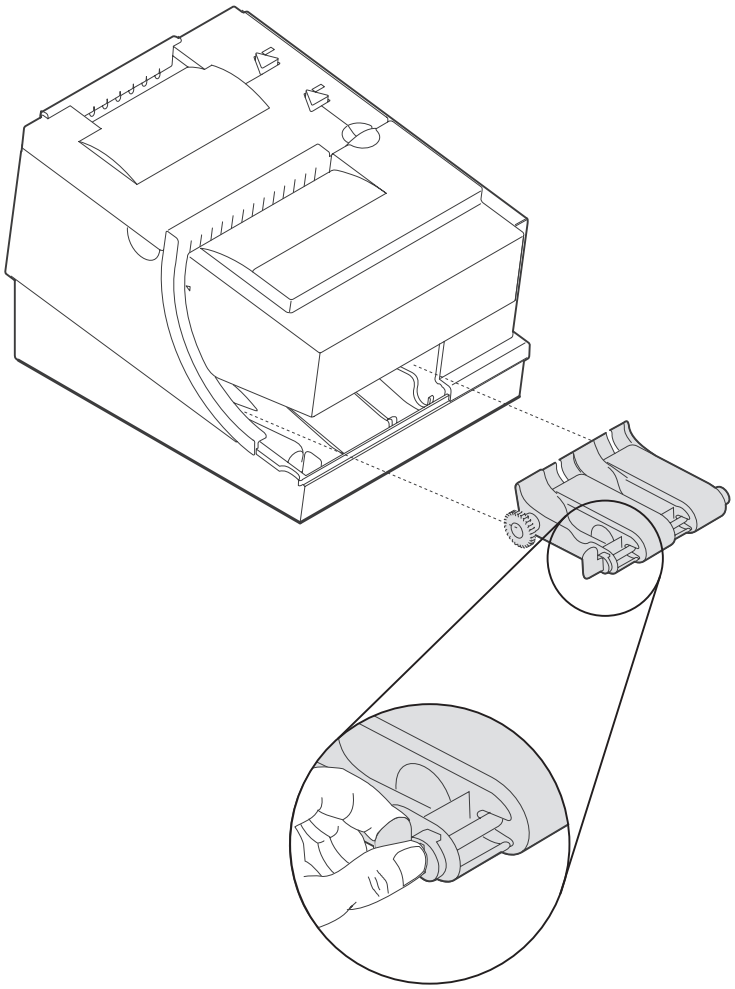

Figure 103. Removing the Check Flipper Cartridge

4. Reach inside the document insert station and carefully remove the jammed check.
5. Remove any debris from the belts. Clean the belt surface with a brush or damp cloth. Dry the belts completely.
6. Reinstall the check flipper cartridge and the lower DI cover.

MICR Reader Read Head Cleaning

The MICR reader read head should be cleaned after 10 000 checks are processed or every 3 months. Insert the MICR reader cleaning card through the document insert station several times. (See “Appendix C. Tools and Supplies” on page 199 to order cleaning cards.)

If cleaning the MICR reader read head does not solve a problem you are having, it might be that you are experiencing electromagnetic noise interference. Sources of electromagnetic noise (for example, displays, security towers, and other sources) can interfere with the MICR reader read head. The printer filters noise from many devices. If the MICR reader does not function properly, rearranging the printer relative to the device may improve MICR reader reading. The noise source should be as far away as possible from the right side of the printer.

For additional information on troubleshooting MICR reader read problems, see “Offline Tests” on page 25.

Thermal Printhead Cleaning

The thermal printhead can be cleaned whenever print quality deteriorates.

1. Open the paper cover.
2. Using a cotton swab soaked in isopropyl alcohol, gently wipe the printhead several times on its print line and on the surrounding area. See Figure 104.
3. Wipe off any residual alcohol with a dry swab.

If print quality does not improve after cleaning the thermal printhead, call for service.

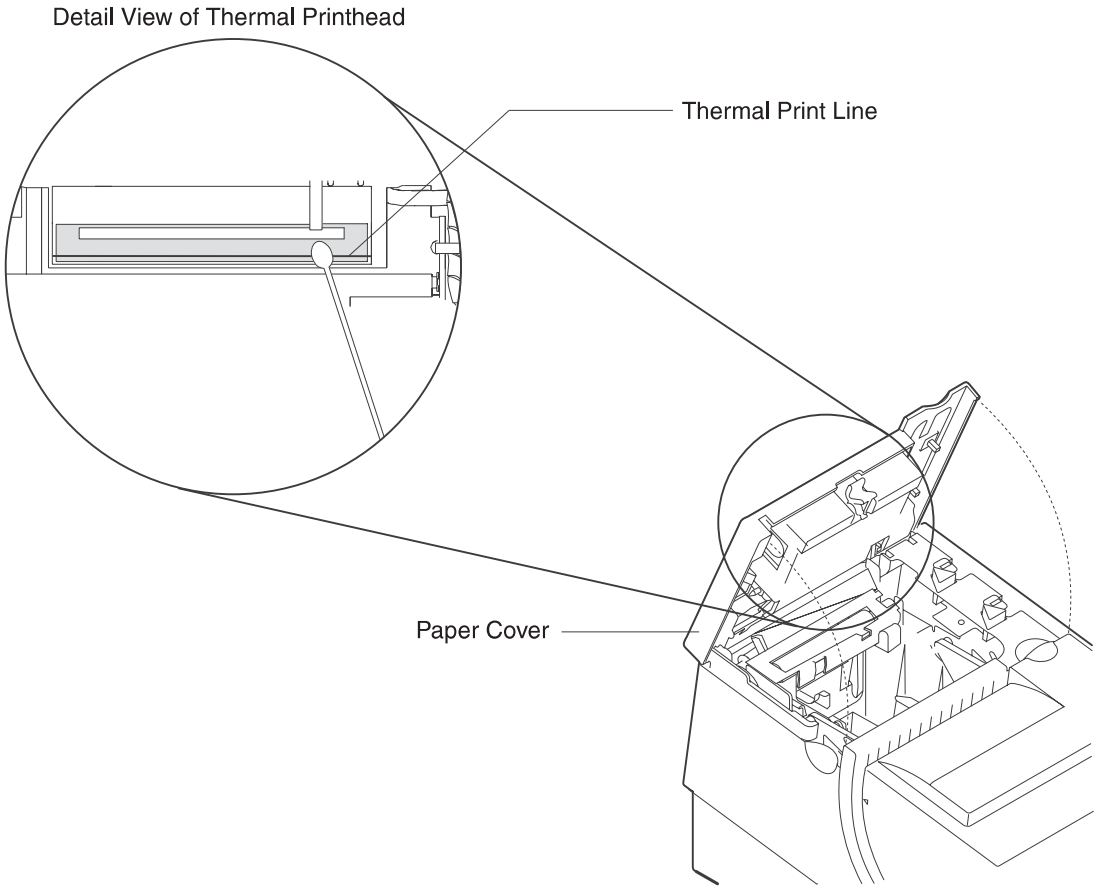

Figure 104. Printhead and Print Line Area

updated October 30, 2001

Part 3. Models TF6 and TM6

This part contains repair/replacement, adjustment, and daily operational procedures for models TF6 and TM6. It also contains the parts catalog for these models.

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Chapter 7. Problem Determination

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Removing and Replacing the Bottom Cover 169
Removing and Replacing the Interface and Main Logic Cards 170
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Offline Diagnostics

The single-station SureMark printers provide the following diagnostic functions that can be performed while the printer is in offline mode:

- Customer receipt test
- Listing of MCT settings
- RS-232 hex dump

Customer Receipt Test

To perform the customer receipt test:

1. Open the top cover. The LED will flash quickly.
2. Press and hold the paper feed button for 5 seconds. The LED indicator will make one quick flash, accompanied by a beep, followed by a pause.
3. Close the top cover. The test starts.
4. See Figure 105 on page 162 and verify that your printer has printed correct information for your model and configuration:
   - RS-232, RS-485 or USB serial interface
   - Double-byte enabled
   - Applicable parameters for RS-232 communications:
     - 9600 or 19 200 baud rate
     - DTR/DSR or XON/XOFF control
   - A solid line should appear as the last line of the test pattern.

   If any characters that appear in Figure 105 on page 162 are missing from the test pattern you print, or if the solid line is missing, go to “Symptoms” on page 163.

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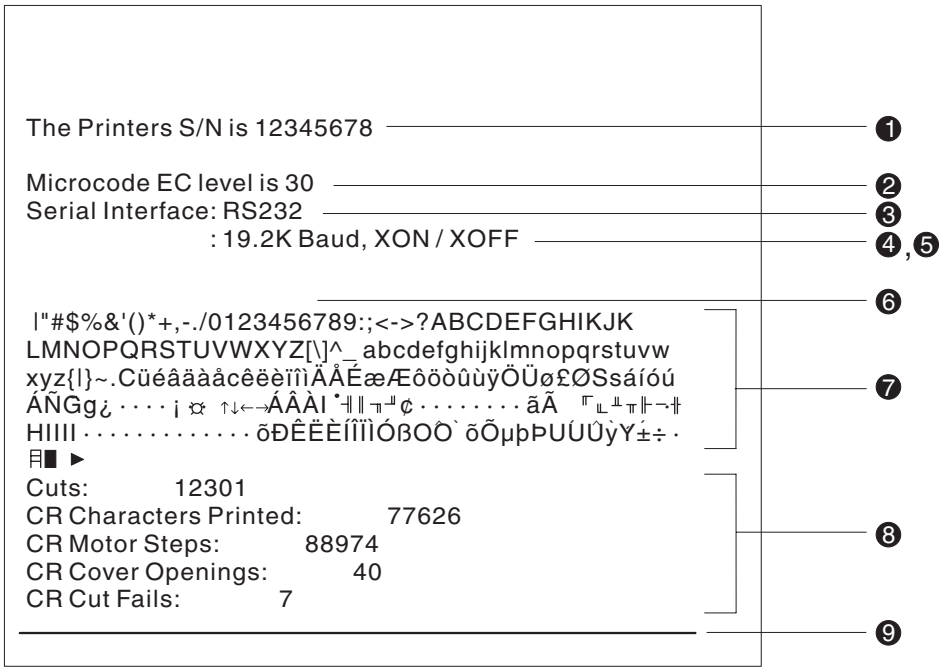

Figure 105. Offline Printer Test Pattern (Models TF6 and TM6)

Test Pattern Notes:

1. The serial number that prints will be the actual serial number of your printer.
2. The microcode level will be the actual level of your printer's microcode.
3. The serial interface will be specified as **RS232**, **RS485**, or **USB**, depending on which interface is used to attach the printer to the system unit.
4. The line speed information appears only when the RS-232 interface is used. The value can be either **9.6K baud** or **19.2K baud**, depending on the RS-232 switch settings. (See "Communication Mode Selections" on page 4.)
5. The RS-232 control mode information appears only when the RS-232 interface is used. The value can be either **DTR/DSR** or **XON/XOFF**, depending on the RS-232 switch settings. (See "Communication Mode Selections" on page 4.)
6. The feature enabled lines will appear only when a feature is installed.
7. This section contains the test pattern.
8. This section contains printer usage statistics that you can use for problem determination.
9. The line across the bottom should be solid with no blank spaces.

Listing the MCT Settings

To list the MCT settings:

1. Open the top cover. The LED will flash quickly.
2. Press and hold the paper feed button for 5 seconds. The LED indicator will make one quick flash, accompanied by a beep, followed by a pause.
3. Press and release the paper feed button again. The LED indicator will make two quick flashes, accompanied by a beep, followed by a pause.
4. Close the top cover to start the listing.

Note: Pressing and releasing the paper feed button a third time will cause the printer to return to normal mode.

RS-232 Hex Dump

To enable hex dump mode for the Model TF6 or TM6 printer, press and hold the paper feed button while the printer is powered on. If the top cover is open, this also puts the printer in power-up offline mode.

Symptoms

Review the following symptoms or messages and take the suggested actions.

Table 5. Printer Symptoms or Messages – Models TF6 and TM6

Symptom	Repair Actions Listed in Most Likely Order of Failure
Printer does not power ON (LED is off).	1. Check for a good connection and that the printer is plugged in. 2. Check that the printer power switch, which is located under the top cover, is set ON. 3. Replace the power supply or system unit. 4. Exchange the printer interface card. Go to “Removing and Replacing the Interface and Main Logic Cards” on page 170. 5. Exchange the main logic card. Go to “Removing and Replacing the Interface and Main Logic Cards” on page 170.
Printer Ready LED is blinking.	1. Press the customer receipt feed button. 2. Check the paper supply to ensure that the receipt paper is loaded correctly. 3. Ensure that the cover is closed. 4. Press the paper out switch. If the LED stays on and stops blinking, then adjust the thermal paper switch (go to “Thermal Paper Switch Adjustment” on page 176). If the LED continues blinking, replace the thermal paper switch and the cutter lever. 5. Replace the main logic card. 6. Replace the inner cover assembly.
Customer receipt does not advance paper.	1. Check to see if the thermal paper is jammed or loaded incorrectly. 2. Go to “Customer Receipt Paper Movement and Cutter Problems” on page 165 to isolate the problem.
Customer receipt is missing character dots.	1. Check to see if the thermal paper is correctly installed. 2. Check and clean the printhead area, if contaminated. 3. Exchange the thermal printhead. 4. Exchange the printhead cable. 5. Exchange the main logic card.
Print on customer receipt is too light.	1. Check that the paper is new and in good condition. 2. Check that the thermal paper is installed correctly. 3. Check the printhead area, and clean it if it is contaminated. 4. Exchange the frame assembly. 5. Exchange the thermal printhead. 6. Exchange the inner cover assembly.
Customer receipt randomly missing rows of print, accompanied by one thin line on receipt.	Problem is caused by operator pulling the receipt out of the printer. Instruct operators to use the CR feed button to advance the paper, instead of pulling the paper.
Cutter does not work correctly.	1. Check that the paper is loaded correctly. 2. If paper is folded or partially cut, go to “Customer Receipt Paper Movement and Cutter Problems” on page 165.

Table 5. Printer Symptoms or Messages – Models TF6 and TM6 (continued)

Symptom	Repair Actions Listed in Most Likely Order of Failure
T7151 Printer card or cable is failing.	1. Check or exchange the printer interface cable. 2. Exchange the main logic card. Go to “Removing and Replacing the Interface and Main Logic Cards” on page 170.
T7159 EEPROM error.	Exchange the main logic card. Go to “Removing and Replacing the Interface and Main Logic Cards” on page 170.
T7161 Command reject.	An invalid command was sent to the printer.
T7165 CR paper is empty or cover is open.	1. Ensure that paper is in the printer and the cover is closed. 2. Press the customer receipt feed button to advance about 76 mm (3 in.) of paper. 3. Check to see if the paper is installed correctly in the customer receipt station. 4. Open the top cover and manually press the switch. 5. Adjust the switch. Go to “Thermal Paper Switch Adjustment” on page 176. 6. Exchange the thermal paper switch and the cutter sensor lever. 7. Exchange the main logic card. Go to “Removing and Replacing the Interface and Main Logic Cards” on page 170.
T7166 Firmware error.	1. Update the SureMark firmware by downloading a new image from the utility diskette. Go to “Chapter 2. SureMark Installation, Service, and Utility Software” on page 11. 2. Exchange the main logic card. Go to “Removing and Replacing the Interface and Main Logic Cards” on page 170.

Customer Receipt Paper Movement and Cutter Problems

This procedure helps isolate customer receipt paper movement or paper cutting problems.

1. Open the top cover.
2. Apply light pressure to the platen and turn the thermal drive gear in the direction of the arrow shown in Figure 106. The platen should move in the same direction as the gear moves. If the platen did not move, exchange the inner cover assembly.
3. Apply light pressure to the platen and turn the thermal drive gear in the opposite direction. The cutter blade should move forward and then return to the fully open position. The platen should not move. If the blade does not move or the platen does move, replace the inner cover assembly.
4. If all of the above hardware worked correctly:
   a. Temporarily restore power to the printer. Press the paper out switch (see Figure 107 on page 166). The idler gear should briefly rotate. Remove power from the printer by either unplugging it from the wall outlet or turning off the system unit.
   b. If the gear does not rotate, exchange the idler gear and the customer receipt motor. See “Removing and Replacing the Thermal Print Mechanism” on page 172. Ensure that the thermal paper is loaded and the top cover is latched.
   c. If the gear still does not rotate, exchange the main logic card. See “Removing and Replacing the Interface and Main Logic Cards” on page 170.
5. If the cutter moves, but either does not cut the paper or only partially cuts the paper, exchange the inner cover assembly and the frame assembly.

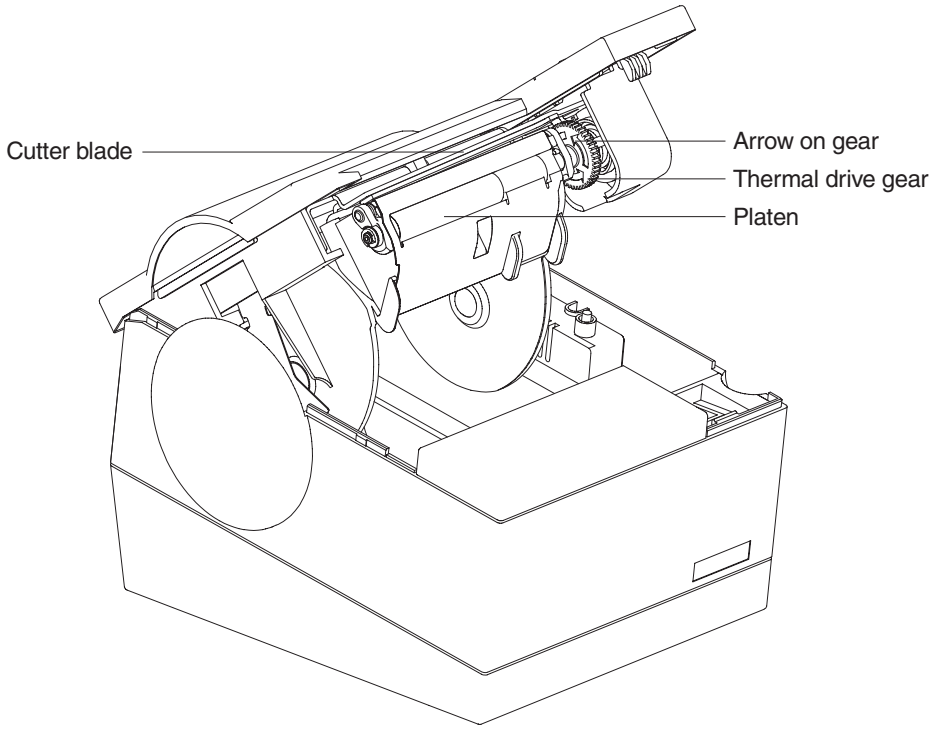

Figure 106. Thermal Drive Gear

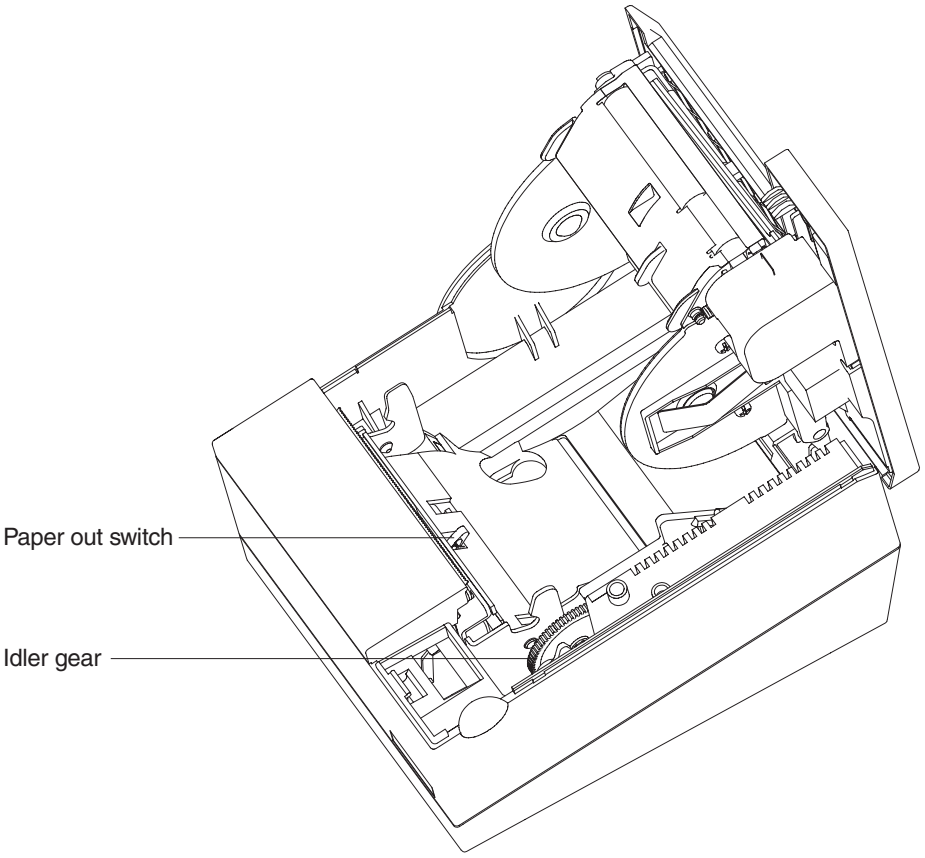

Figure 107. Paper Out Switch and Idler Gear

FRU Removal and Replacement

This section includes removal and replacement procedures for the SureMark printer field replaceable units (FRUs) for Models TF6 and TM6.

Removing and Replacing the Top Cover and Inner Cover Assembly

Important

This procedure shows you how to remove the top cover and inner cover assembly (FRUs). Stop when you get to the failing FRU, exchange the FRU, and reassemble. The FRUs are highlighted.

1. Power OFF the printer by turning the printer off, powering off the system or unplugging the external power source from the wall outlet.
2. Open the top cover.
3. Disengage the drag strip by pulling the drag strip away from the post.
4. While pressing up on the tab, slide the top cover and inner cover assembly toward the drag strip. See Figure 108 on page 168.
5. Remove the two screws at the back of the top cover.
6. Separate the **inner cover assembly** from the top cover. See Figure 108 on page 168.
7. Lift the **top cover** away from the inner cover assembly until the latch is freed.
8. Reassemble.

Note: Replacement inner-cover assemblies are configured for drop-in paper loading if the two white spheres that are shipped with them are uninstalled. For snap-in paper loading, install the spheres by pulling back on the metal spring and sliding the sphere into place.

Choose one of the following links to return to the procedure from which you came:

- “Removing and Replacing the Interface and Main Logic Cards” on page 170

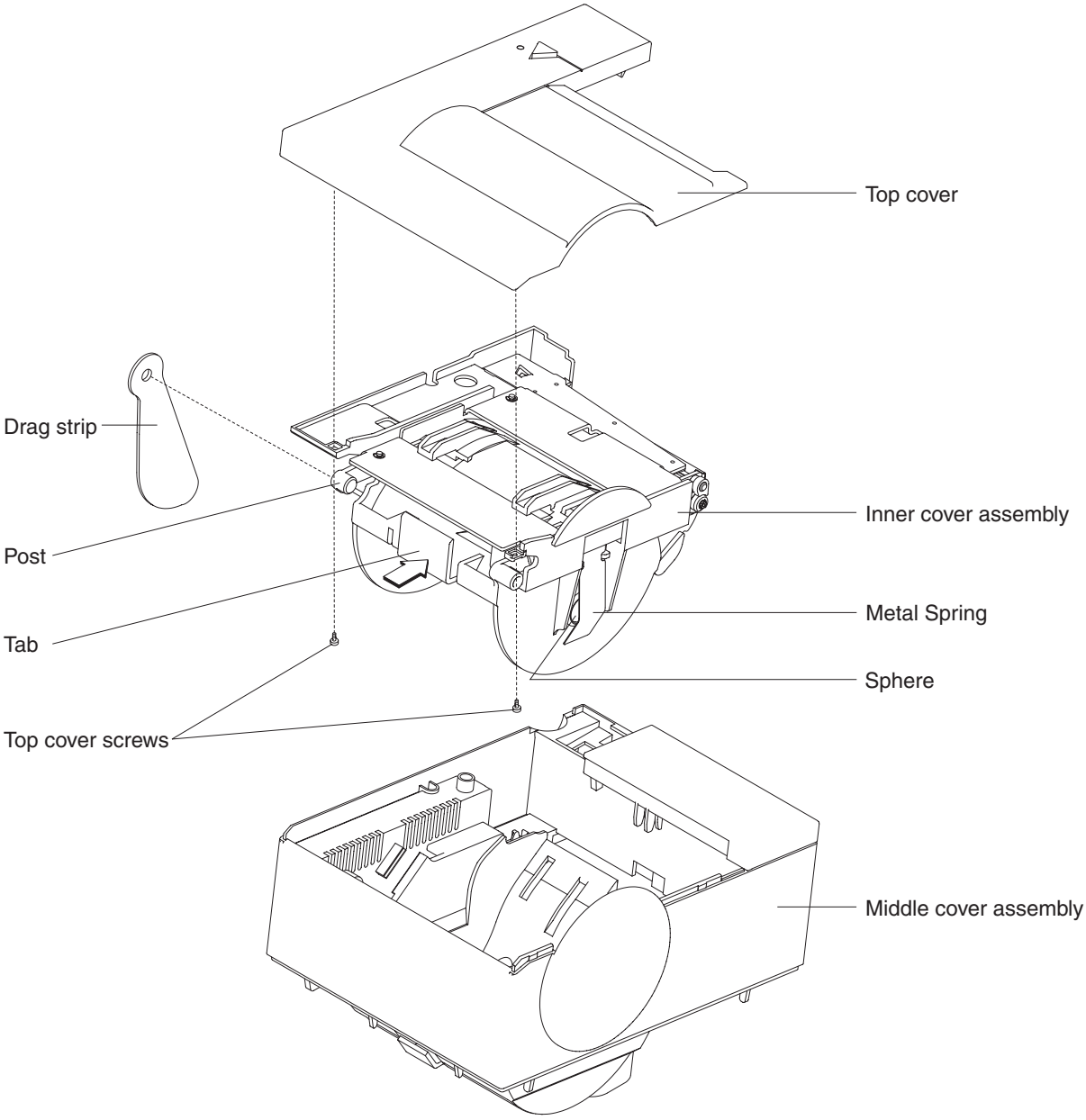

Figure 108. Removing the Top Cover and Inner Cover Assembly

Removing and Replacing the Bottom Cover

Important

This procedure shows you how to remove the bottom printer cover (FRU). Stop when you get to the failing FRU, exchange the FRU, and reassemble. The FRUs are highlighted.

1. Power OFF the printer by turning the printer off, powering off the system or unplugging the external power source from the wall outlet.
2. Invert the printer.
3. Press down on the tab at the back of the printer. A click sounds when the bottom cover is free. See Figure 109.
4. Lift the back of the bottom cover upward.
5. Lift the bottom cover away from the printer.
6. To reassemble, place the tabs on the front of the bottom cover into the slots at the bottom front of the inner cover assembly. Press down on the bottom cover until it almost touches the tab at the back of the printer, then press the bottom cover at each side of the tab to firmly seat the cover.

Choose one of the following links to return to the procedure from which you came:

- “Removing and Replacing the Interface and Main Logic Cards” on page 170

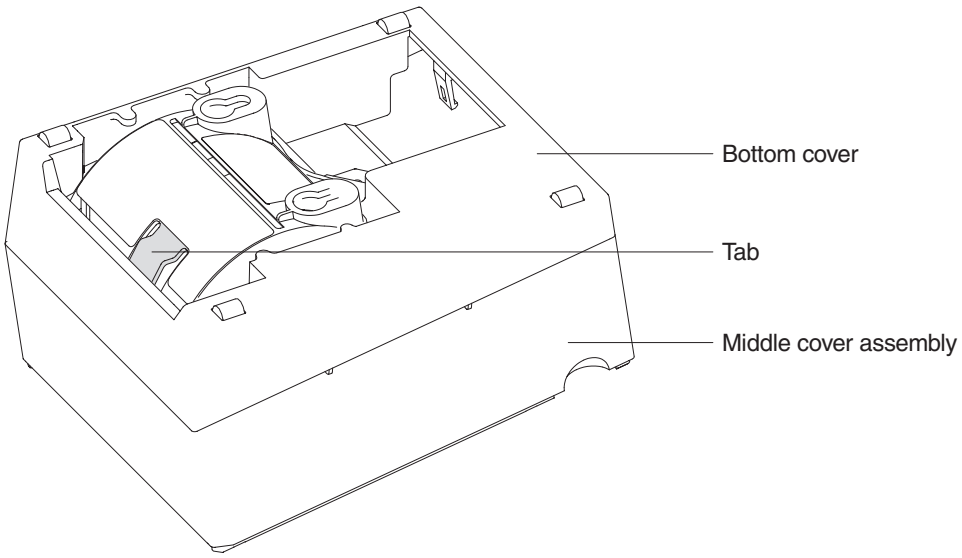

Figure 109. Removing the Bottom Cover

Removing and Replacing the Interface and Main Logic Cards

Important

This procedure shows you how to remove the interface and main logic FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

1. Invert the fully assembled printer.
2. Remove the bottom cover.
3. Remove all cables from the main logic card. See Figure 110.
4. Lift the main logic card and interface card straight up and out of the bottom cover.
5. Separate the connector that joins the **main logic card** and **interface card**. See Figure 111 on page 171.
6. Reassemble.
7. Whenever you exchange the main logic card, you must configure the printer model and then update the firmware. Make a note of the printer model and serial number, which are located on the label that is either on or under the front cover of the printer, then go to “Firmware Update” on page 15.

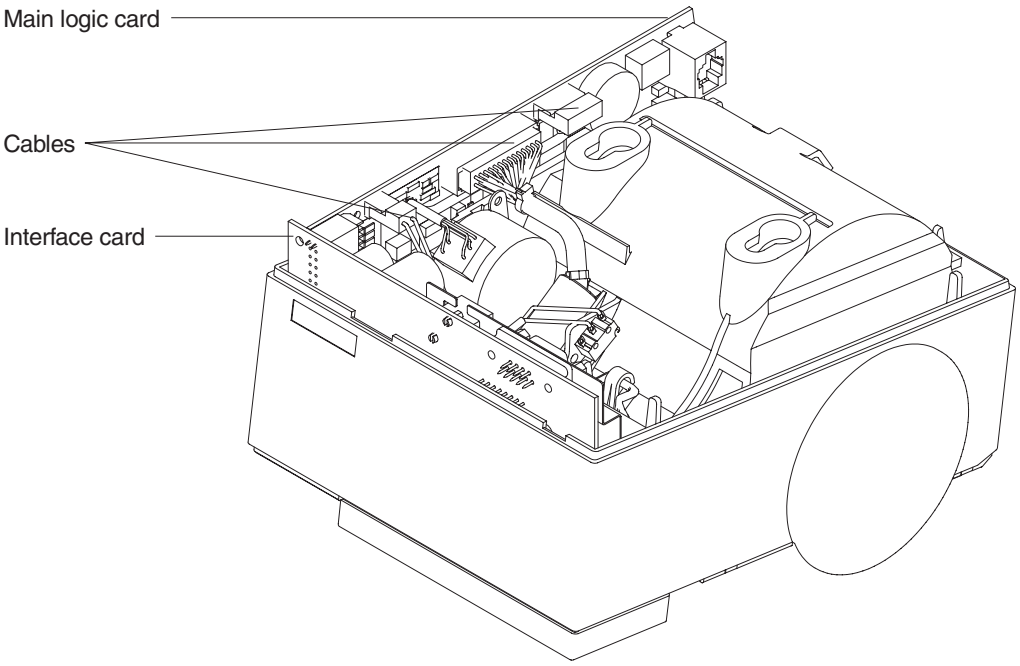

Figure 110. Removing the Interface and Main Logic Cards – Models TF6 and TM6

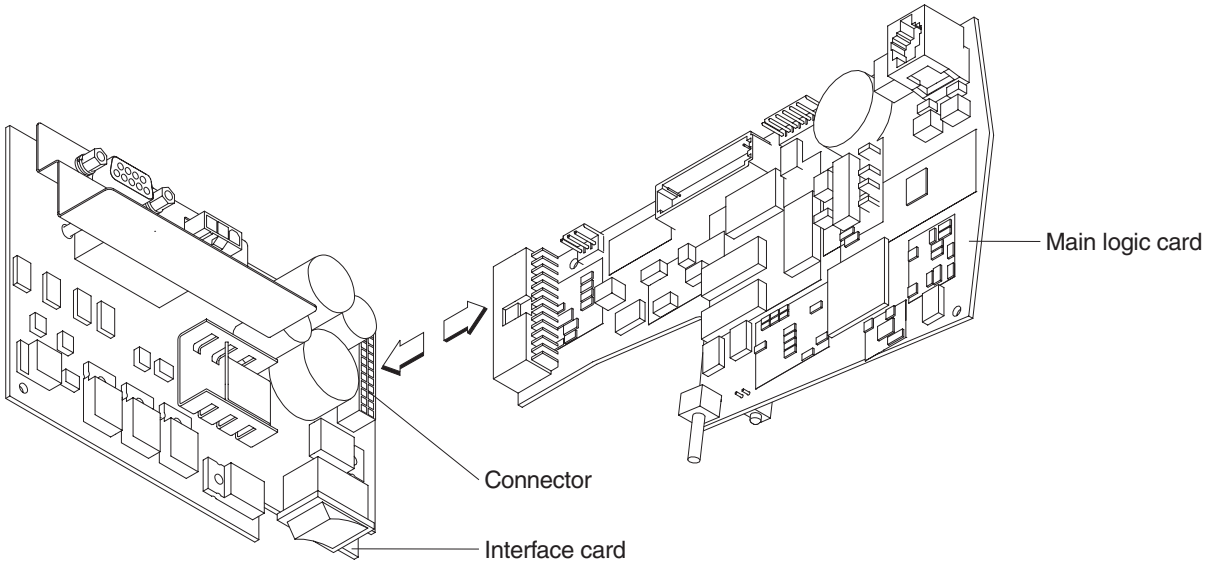

Figure 111. Separating the Interface and Main Logic Cards – Models TF6 and TM6

Removing and Replacing the Thermal Print Mechanism

Important

This procedure shows you how to remove the thermal printhead assembly FRUs. Stop when you get to the failing FRUs, exchange the FRUs, and reassemble. The FRUs are highlighted.

1. Invert the printer.
2. Remove the **bottom cover**. Go to “Removing and Replacing the Bottom Cover” on page 169.
3. Remove the interface and main logic cards. Go to “Removing and Replacing the Interface and Main Logic Cards” on page 170.
4. Note how the printhead cables are routed, then disconnect the long cable from the printhead.
5. Move the printhead cable out from under the plastic hook.
6. Invert the printer.
7. Push the tear bar toward the back of the printer, while pushing the metal frame toward the right. The assembly will drop out of the printer.
8. Remove the two screws that hold the customer receipt motor on.
9. Pull the **customer receipt motor** away from the frame assembly.
10. Remove the e-clip that holds the idler gear in place.
11. Remove the idler gear.
12. Remove the thermal printhead cables.
13. Remove two recessed screws to separate the printhead from the **frame assembly**.

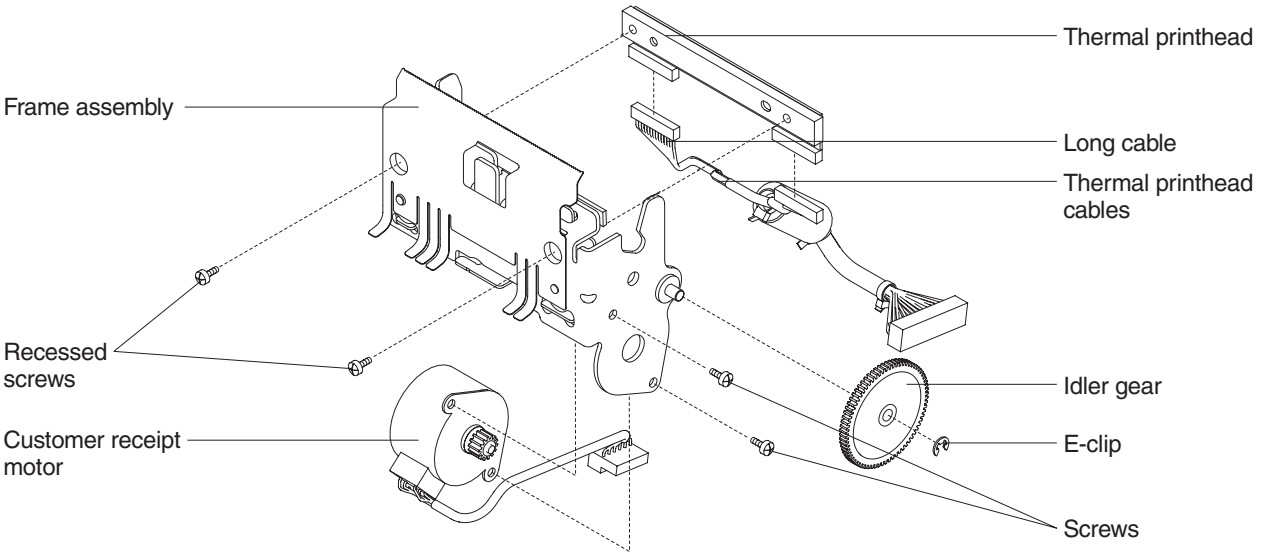

Figure 112. Thermal Print Mechanism

14. Reassemble.
15. Check the thermal paper switch operation and adjust if necessary. Go to “Thermal Paper Switch Adjustment” on page 176.

16. When you replace the thermal printhead or the customer receipt motor, run the service diskette and select **Reset Statistics** for the FRU. See “Software Adjustments (Models TI1, TI2, TI3, TI4, TG3 and TG4)” on page 11.

Chapter 8. Hardware Adjustment Procedures

Electrostatic Discharge (ESD) 175
Thermal Paper Switch Adjustment 176

DANGER

Never work on equipment or connect or disconnect signal cables during periods of lightning activity.

CAUTION:
For your safety, connect equipment requiring electrical power to a correctly wired and grounded outlet.

Note: For translations of these safety notices, see “Appendix D. Translated Safety Notices” on page 201.

Electrostatic Discharge (ESD)

Attention: ESD damage can occur when there is a difference in charge between the part, the product, and the service person. No damage will occur if the service person, the product, and the part being installed are at the same charge level.

ESD Damage Prevention:

Anytime a service action involves physical contact with logic cards, modules, back-panel pins, or other ESD sensitive (ESDS) parts, the service person must be connected to an ESD common ground point on the product through the ESD wrist strap and cord.

The ESD ground clip can be attached to any frame ground, ground braid, green wire ground, or the round ground prong on the ac power plug. Coax or connector outside shells can also be used.

Handling Removed Cards:

Logic cards removed from a product should be placed in ESD-protective containers. No other object should be allowed inside the ESD container with the logic card. Attach tags or reports that must accompany the card to the outside of the container.

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Thermal Paper Switch Adjustment

1. Remove the paper from the printer.
2. Loosen the mounting screw for the thermal paper switch until the switch and the bracket rotate smoothly. See Figure 113.
3. Rotate the thermal paper switch toward the printhead until the switch arm clicks.
4. Rotate the thermal paper switch away from the printhead until the switch arm clicks again.
5. Rotate the thermal paper switch slightly further and secure the switch with a screw.
6. Test the printer by installing about 150 mm (6 in.) of paper and closing the cover. The blinking CR light should go to a steady state. If the light does not, press the CR paper feed button to advance the receipt paper a few inches. The printer ready LED should then go to a steady state.
7. With the paper cover still closed, feed the paper out of the printer. The printer ready LED should start to blink, indicating an out-of-paper condition.

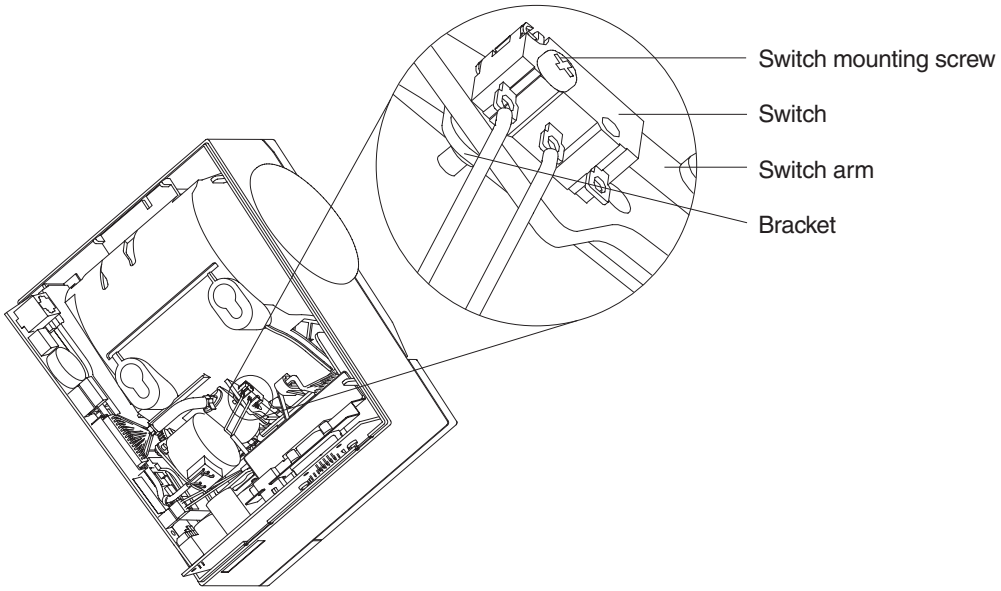

Figure 113. Thermal Paper Switch Adjustment

Chapter 9. Parts Listing

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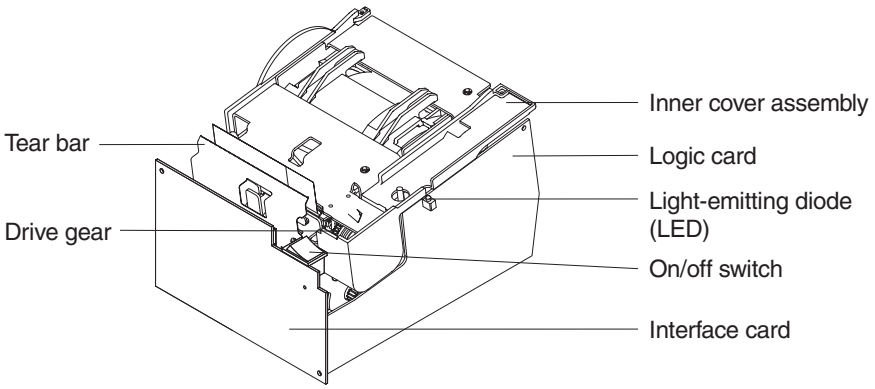
Assembly 15: Interface and Logic Cards 180
Assembly 16: Thermal Printhead Assembly 182
Assembly 17: Hardware Kits 184
Assembly 18: Miscellaneous Parts and Accessories 186



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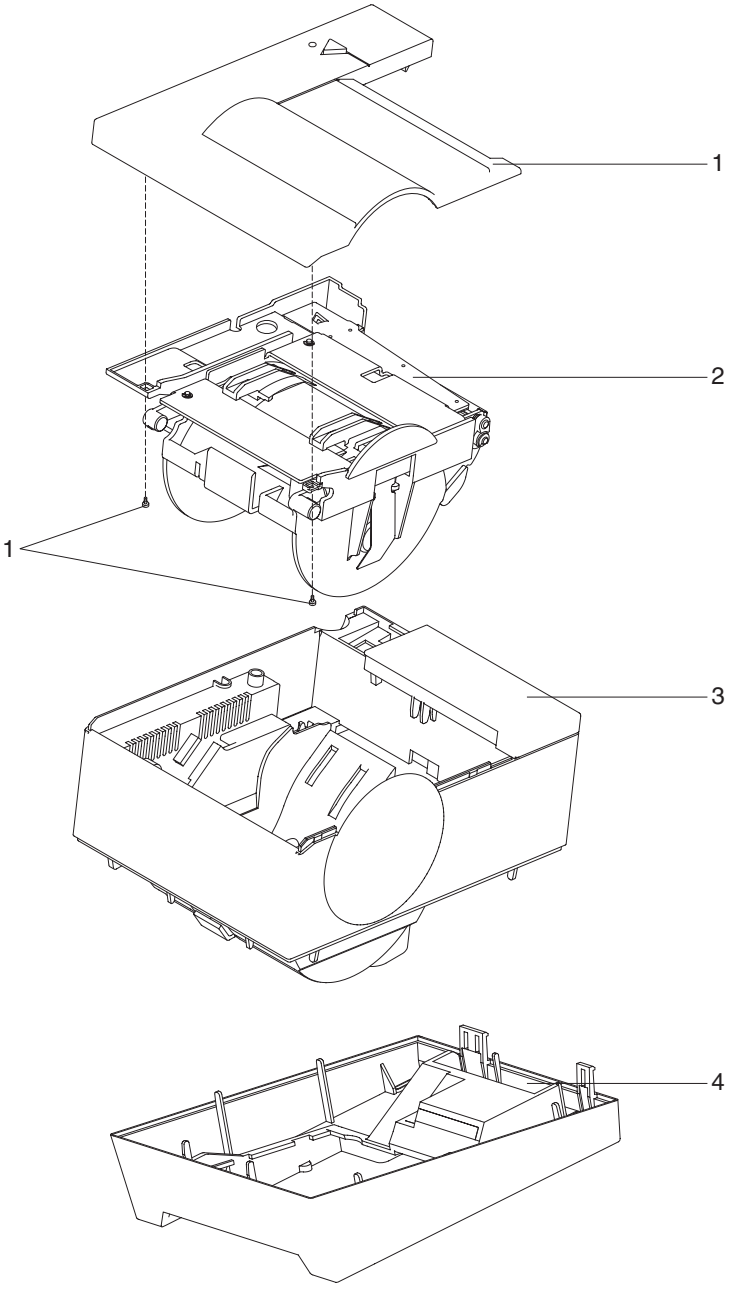
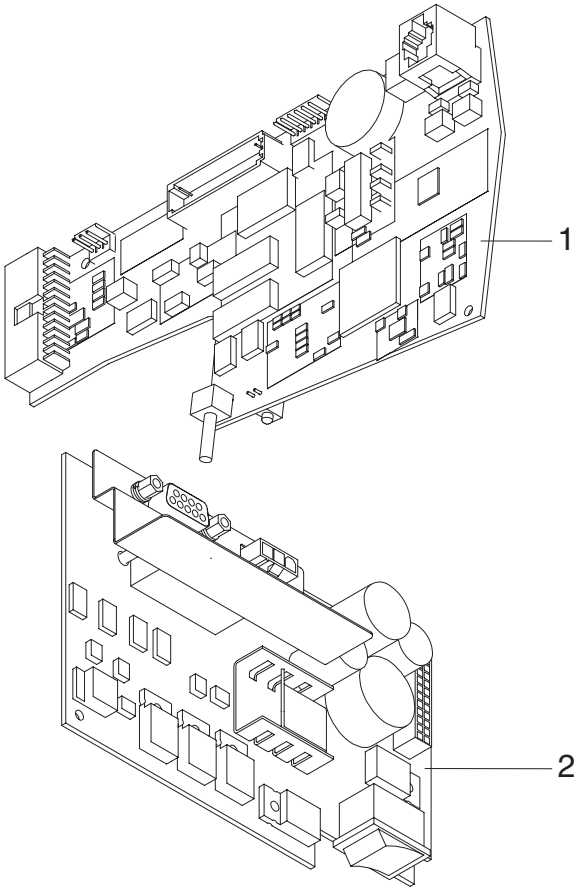
Assembly 14: Covers



Assembly 14: (continued)

Asm–Index	Part Number	Units	Description
14–1	16K8622	1	Cover, Top (pearl white) includes 16K8538 drag strip
–1	16K8623	1	Cover, Top (iron gray) includes 16K8538 drag strip
–2	16K8628	1	Inner Cover Assembly (80 mm) includes 16K8633 sphere (2x)
–2	16K8629	1	Inner Cover Assembly (58 mm) includes 16K8633 sphere (2x)
–3		NP	Cover, Middle
–4	16K8615	1	Cover, Bottom (litho gray)
–4	16K8616	1	Cover, Bottom (storm gray)
–4	16K8617	1	Cover, Bottom (iron gray)
–			

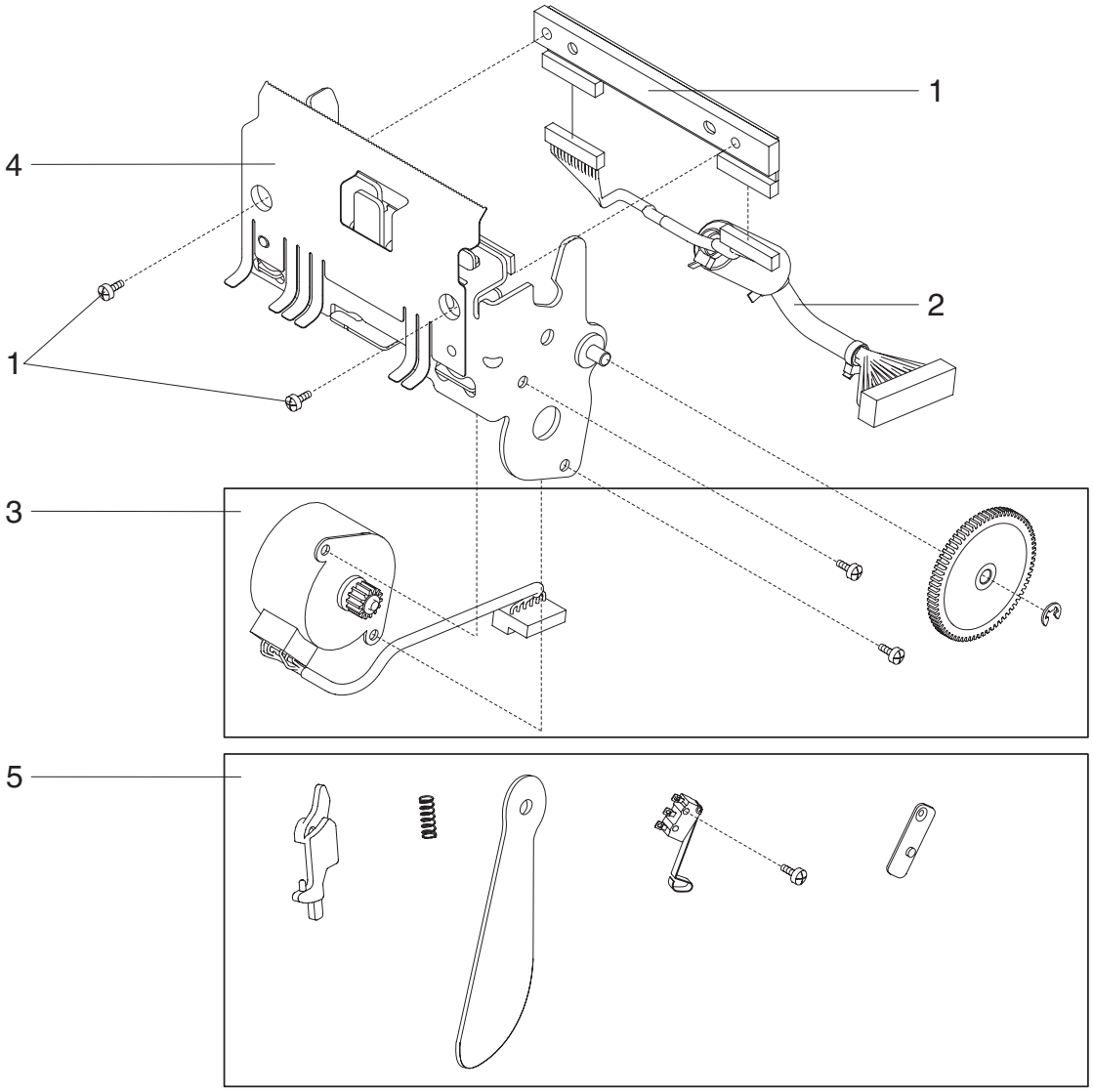
Assembly 15: Interface and Logic Cards



Assembly 15: (continued)

Asm–Index	Part Number	Units	Description
15–1	16K8695	1	Card Asm, Main Logic (512K)
–1	16K8602	1	Card Asm, Main Logic (2 MB)
–1	16K8605	1	Card Asm, Main Logic (8 MB)
–2	16K8603	1	Card Asm, Interface (RS-232 and RS-485), 38V
–2	16K8607	1	Card Asm, Interface (RS-232 and RS-485), 24V
–2	16K8604	1	Card Asm, Interface (USB)

Assembly 16: Thermal Printhead Assembly



Assembly 16: (continued)

Asm–Index	Part Number	Units	Description
16–1	16K8624	1	Thermal Printhead
–2	16K8625	1	Cable, Thermal Printhead
–3	16K8626	1	Motor/Idler Assembly
–4	16K8618	1	Frame Assembly
–5	16K8643	1	Sensor, Thermal Paper
–	16K8674	NP	• Screw, M2X12, pan head
–	16K8532	NP	• Sensor Plate
–	16K8533	NP	• Sensor Asm, paper
–	16K8538	NP	• Drag Strip
–	16K8681	NP	• Lever, Cutter Sensor
–	16K8682	NP	• Spring, Cutter Sensor

Assembly 17: Hardware Kits

Asm–Index	Part Number	Units	Description
17–1	16K8627	1	Kit, Miscellaneous Parts
–	16K8519	NP	• Spring, extension – cutter
–	16K8555	NP	• Spring, right bushing
–	16K8635	NP	• Spring, left bushing
–	16K8674	NP	• Screw, M2X12, pan head
–	16K8675	NP	• Screw, M3X12, pan head
–	16K8682	NP	• Spring, cutter sensor
–	42H1028	NP	• Screw, M2X6 self-tapping
–	42H1154	NP	• E-clip, ETW-4
–	42H1179	NP	• Washer, RS-232 connector
–	6341458	NP	• E-clip, ETW-2.5
–	6410857	NP	• Screwlock, RS-232 connector
–	6429529	NP	• Screw, M3X4
–	69F3557	NP	• Lockwasher, RS-232 connector
–	73G2620	NP	• E-clip, ETW-3
–	92F5403	NP	• Screw, M3.5X7.1 thd cutting
–	93F0233	NP	• E-clip, ETW-2

Assembly 18: Miscellaneous Parts and Accessories

Asm–Index	Part Number	Units	Description
18–1	42H1157	1	Filler Panel, used with Model 4694 slant top
–2	30L6217	1	Filler Panel, used with SurePOS 700 Series slant top
–3	30L6322	1	Filler Panel, used with SurePOS 700 Series flat top
–4	16K8691	1	Filler Panel (litho gray)
–5	16K8692	1	Filler Panel (storm gray)
–6	42H1176	1	Power Supply, RS-232 or standard USB attached only
–7	20P0365	1	Cable, RS-232 Interface, 0.75 m
–8	86H2192	1	Cable, RS-232 Interface, 2 m
–9	86H2195	1	Cable, RS-232 Interface, 4 m
–10	08L2014	1	Standard USB cable, 5 m
–11	01L1647	1	Distributed USB cable, 3.8M
–12	01L1646	1	Integrated USB cable, 0.5 m
–13	16K8702	1	Wall mounting bracket
–14	72H3802	1	Cash Drawer Cable, Short
–15	72H3803	1	Cash Drawer Cable, Long

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Chapter 10. Operation

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Note: All covers ***must*** be installed on the SureMark printer during operation.

Operating Controls and Indicators

See “Indicator, Control, and Station – Single-Station Printers” on page 4 for operating controls and indicators.

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Paper Loading

1. Open the top cover.
2. If there is any unused paper or if there is an empty paper roll core on the paper holder inside the printer, remove it before inserting a new paper roll. You can throw the core in the trash can.
3. If the printer is configured for ″snap in″ paper loading (two white spheres are present behind the metal springs), then place the paper roll onto the paper roll holder as shown in Figure 114; otherwise, drop the roll into the bucket. The leading edge of the paper should come from the direction of the back of the printer and go across the bottom of the roll as shown in the diagram.

   Note: The thermal printhead will not print on paper with glue on it. If the new paper roll was sealed by glue, tear off the 15 to 20 cm (6 to 8 in.) of paper with glue on it before loading it. Or, you can advance the paper after loading to get rid of the glued paper.

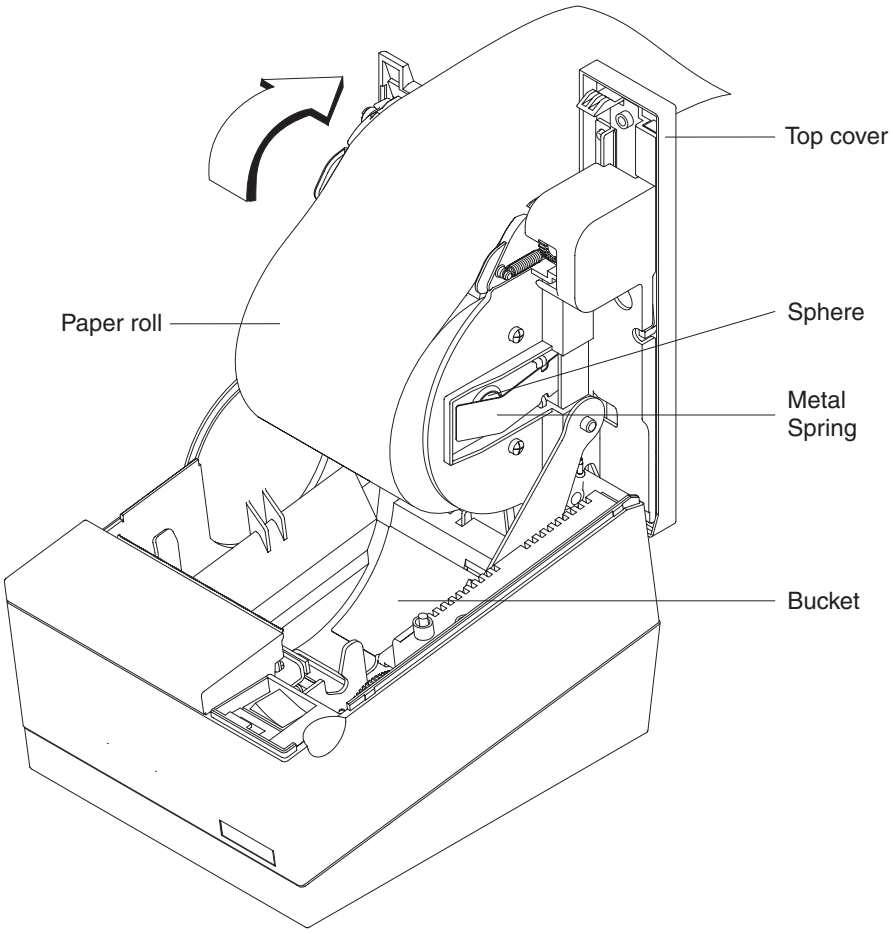

Figure 114. Paper Loading Path

4. Close the top cover.
5. Press the Customer Receipt Feed button to advance the paper to verify that the paper is feeding correctly. Feed 30 cm (about 1 ft) of paper through to test for correct alignment.

Thermal Printhead Cleaning

The thermal printhead can be cleaned whenever print quality deteriorates.

1. Open the top cover.
2. Using a cotton swab soaked in isopropyl alcohol, gently wipe the printhead several times on its print line and on the surrounding area. See Figure 115.
3. Wipe off any residual alcohol with a dry swab.

If print quality does not improve after cleaning the thermal printhead, call for service.

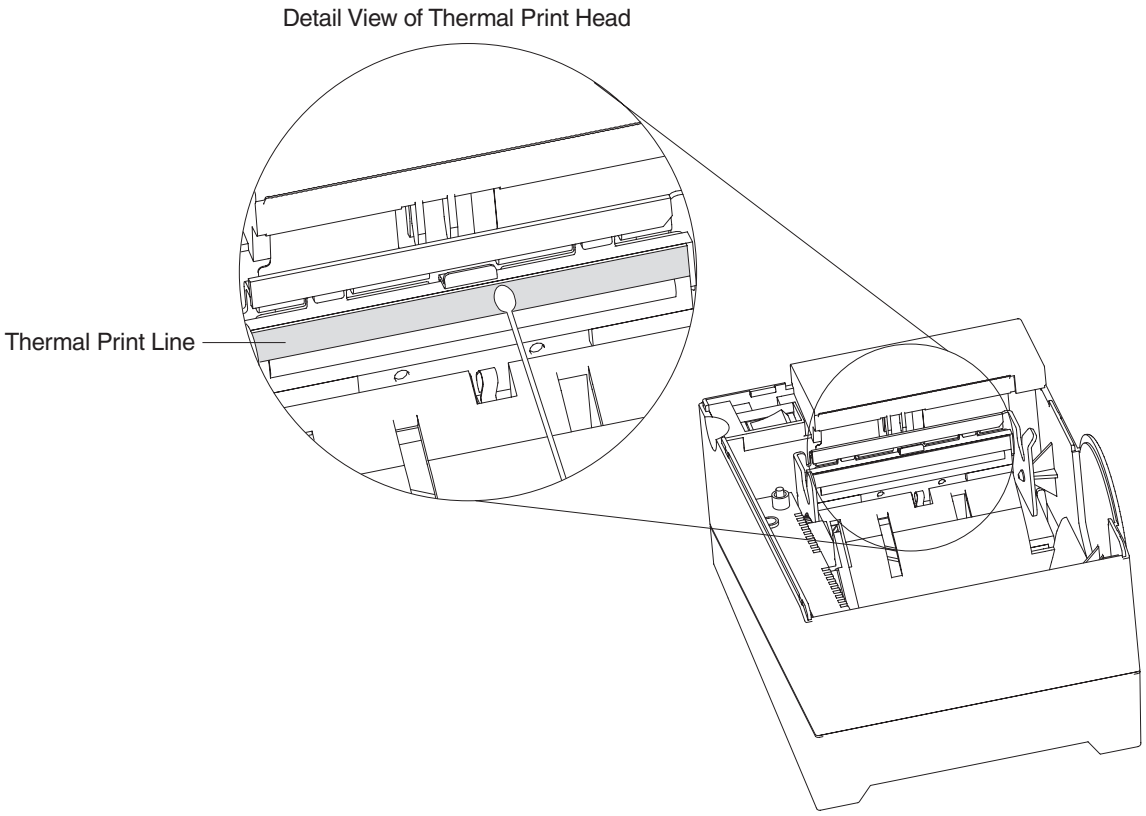

Figure 115. Printhead and Print Line Area

updated October 30, 2001

Part 4. Appendixes

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Appendix A. Maintenance Inspection

Note: See *Electrical Safety for IBM Customer Engineers*, S229-8124.

An IBM maintenance inspection is to be performed as part of any alterations and attachments review on any IBM product presently on lease rental, maintenance agreement or per call service by IBM. If the inspection indicates that the level of safeness of the IBM product is unacceptable, it must be brought up to an acceptable level.

Maintenance Checklist

Note: All non-IBM devices and attachments must be removed from the system unit before conducting the maintenance checklist. See the *Hardware Service Manual for Point-of-Sale Input/Output Devices*.

1. Switch Ready mode OFF.
2. Disconnect the ac power cord from the wall receptacle.
3. Check the ac power cord for the following:
   a. Use a meter to measure third-wire ground continuity for 0.1 ohms or less between the external ground pin and the frame of the power supply. Access the power supply frame at the rear near the fuse.
   b. The ac power cord should not be frayed or damaged.
4. Check for non-IBM alterations. If any are present, has the *R009 non-IBM Alterations/Attachments Survey* been completed?
5. Check for damaged or missing insulation on wires.
6. Check for exposed electrical connections or terminals.
7. Check for the presence and condition of the following safety labels:
   a. The safety label on the outside surface of the video display (if present) should read: “Hazardous voltage. Do not remove this cover. No serviceable parts inside.”
   b. Rechargeable battery labels should contain instructions for recycling.
8. Check the inside of the system base unit for obvious unsafe conditions such as metal filings, contamination, water or other fluids, or marks of fire or smoke damage.
9. Ensure that the voltage specified on the voltage label matches the voltage of the ac power cord.
10. Ensure that the fasteners that hold the top cover of the power supply are not missing and that they have not been changed.
11. For models with batteries, check the condition of the battery.
12. Ensure that Ready mode is OFF and reinstall the front panel.
13. Connect the ac power cord to a power receptacle and ensure that the machine switches to Ready mode ON.

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Appendix B. Preventive Maintenance Information

Preventive Maintenance Scheduling
Perform these preventive maintenance procedures during unscheduled service calls.

Models TI1, TI2, TI3, TI4, TG3, and TG4

- Clean the dust and debris from the paper cover and ribbon cover areas.
- If the printer has a check flipper, clean dust and debris from the area under the flipper cover and the flipper cartridge (see Figure 21 on page 42).

Models TF6 and TM6

- Clean the dust and debris from the top cover area.

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Appendix C. Tools and Supplies

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Cash Drawer Connector Pin Assignments 200

Special Tools

To maintain the SureMark printers, you may need the following items that are not supplied in the tool kit:

- 9-pin loop-back test connector (serial ports), P/N 38H6039
- Test check packet, P/N 73G2601
- Three E-clip tools, P/Ns 00453521, 9900612, and 9900059
- Printhead gap gauge, P/N 42H1190

Expendable Supplies

See “Resources on the Internet” on page 22 for information about OEM paper certifications for the SureMark printers.

- Paper for the printer, order P/N locally
- MICR head cleaning cards, P/N 73G2600

RS-232 Connector Pin Assignments

SureMark printers contain a 9-pin D-shell connector port for RS-232 communication. This port is on the interface card, accessible under the printer without removing the printer covers. The connector has the following pin functions:

Pin	Signal
1	Not Connected
2	Transmit
3	Receive
4	DTR (Not connected on 3-wire cable)
5	Signal Ground
6	DSR (Not connected on 3-wire cable)
7	Not Connected
8	Not Connected
9	Not Connected

USB Connector Pin Assignments

SureMark printers contain a USB port, if the USB feature is installed. This port is on the interface card, accessible under the printer without removing the printer covers. Connection to the port can be with either the standard USB Type B connector, which requires a 24-volt power brick, or with the powered USB connector, which contains 24-volt power lines within the communications cable.

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The standard USB Type B connector has the following pin functions:

Pin	Signal
1	Vbus (+5 V dc)
2	Minus data
3	Plus data
4	Ground

The powered USB connector has the following pin functions:

Pin	Signal
1	Ground (+24 V dc)
2	+24 V dc
3	Ground (Vbus)
4	Plus data
5	Minus data
6	Vbus +5 V dc
7	+24 V dc
8	Ground (+24 V dc)

Cash Drawer Connector Pin Assignments

SureMark printers have a single cash drawer connector. This connector can drive either a single cash drawer or two cash drawers by using a special cable. The connector also provides a status line which indicates if one of the cash drawers is open.

Drive voltage for each cash drawer solenoid is 24 V dc at a current of 1 ampere. Connector pins are assigned as follows:

Pin	Signal
1	Not Connected
2	Solenoid 1 Driver
3	Cash Drawer Status
4	+24 V dc
5	Solenoid 2 Driver
6	Ground

The cash drawer solenoids should be connected between pins 4 and 2 for cash drawer 1 and between pins 4 and 5 for cash drawer 2. A ″Y″ cable is required to bring out all the appropriate lines to attach the two units.

The cash drawer status line has a 10k resistor pull-up connected to the +5 V dc.

Note: The drawer sensor should switch pin 6 to pin 3 when the drawer is open.

Appendix D. Translated Safety Notices

The following general safety considerations should be observed whenever you work with electricity or with any electronic equipment.

DANGER

Never work on equipment or connect or disconnect signal cables during periods of lightning activity.

CAUTION:
For your safety, connect equipment requiring electrical power to a properly wired and grounded outlet.

CAUTION:
For safety when running the printer test, make sure personal articles such as ties, necklaces, and bracelets do not get caught in the moving print head.

Nederlands - België

Algemene veiligheidsvoorschriften

U moet de volgende algemene veiligheidsvoorschriften in acht nemen telkens als u met elektriciteit of met elektronische apparatuur werkt.

GEVARR!
Tijdens een onweer is het verboden met de apparatuur te werken of signaalkabels aan te sluiten of los te koppelen.

LET OP !

Uit veiligheidsoverwegingen moet elektrische apparatuur op een correct bedraad en geaard stopcontact aangesloten worden.

LET OP !

Uit veiligheidsoverwegingen moet u ervoor zorgen dat uw das, halssnoer of armbanden niet tussen de bewegende printerkop geraken bij het testen van de printer.

Français - Belgique

Consignes de sécurité générales

Vous devez tenir compte des consignes de sécurit;é générales suivantes lorsque vous travaillez avec l'électricit;é ou avec du matériel électronique.

DANGER

Il est interdit de travailler avec le matériel et de connecter ou déconnecter des câbles d'interface pendant un orage.

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CAUTION:
Pour votre sécurité, branchez le matériel électrique sur une prise correctement câblée et mise à la terre.

CAUTION:
Pour votre sécurité, branchez le matériel électrique sur une prise correctement câblée et mise à la terre.

Português do Brasil

Considerações Gerais sobre Segurança

As considerações gerais sobre segurança a seguir devem ser observadas sempre que você trabalhar com eletricidade ou com qualquer equipamento eletrônico.

PERIGO
Nunca trabalhe em equipamento ou conecte ou desconecte cabos de sinal durante períodos de choque.

CUIDADO

Para sua segurança, conecte o equipamento que necessita de força elétrica a uma tomada aterrada adequadamente e com fiação correta.

CUIDADO

Por medida de segurança, ao executar o teste da impressora, certifique-se de que artigos pessoais, tais como gravatas, colares ou pulseiras, não fiquem presos na cabeça de impressão em movimento.

Dansk

Generelle sikkerhedsforskrifter

Vær altid opmäligrksom; på følgende generelle sikkerhedsforskrifter, når du arbejder med elektricitet eller elektronisk udstyr.

Fare!
Arbejd aldrig med udstyr i tordenvejr. Det samme gäliglder for montering og afmontering af signalkabler.

Pas på!

Af sikkerhedshensyn skal udstyrets netledning altid tilsluttes en stikkontakt med korrekt forbindelse til jord.

Pas på!

Sørg for, at slips, halskäligder eller armbånd ikke kommer til at sidde fast i skrivehovedet, når udskrivningstesten foretages.

Suomi

Yleiset turvaohjeet

Noudata seuraavia yleisiä turvaohjeita aina, kun teet sähkökytkentöjä tai käsittelet sähkölaitteita;

VAARA

Ukonilman aikana ei saa kytkeä tai irrottaa kaapeleita eikä käsitellä laitteita.

Varoitus

Kytke laitteiden verkkojohdot vain oikein kytkettyihin ja maadoitettuihin pistorasioihin. Muutoin voit saada sähköiskun.

Varoitus

Kun testaat kirjoitinta, varo, ettei esimerkiksi solmiosi, kaulaketjusi tai rannerenkaasi tartu liikkuvaan kirjoituspäähän.

Français

Généralités

Utilisez les informations générales ci-dessous pour chaque intervention sur du matériel électrique ou électronique.

VAARA

N'effectuez ni intervention sur le matériel;, ni manipulation de câble pendant un orage.

Attention: Par mesure de sécurité, le cordon d'alimentation doit être branché sur un socle de prise de courant correctement câblé et mis à terre.

Attention: Par mesure de sécurité, éloignez; cravates, colliers et bracelets de la tête d'impression pendant le test d'impression.

Deutsch

Allgemeine Sicherheitsüberlegungen

Bei Arbeiten mit Elektrizität oder an elektronischen Geräten müssen die folgenden Sicherheitshinweise beachtet werden.

VORSICHT

Bei Gewitter keine Arbeiten am Gerät vornehmen und keine Kabel anschließen oder lösen.

ACHTUNG

Gerät nur an eine Schutzkontaktsteckdose mit ordnungsgemäß geerdetem Schutzkontakt anschließen.

ACHTUNG

Während des Druckertests darauf achten, daß Halstücher, Krawatten, Ambänder oder Halsketten nicht am Schreibkopf hängen bleiben.

Italiano

Sicurezza - Considerazioni generali

Osservare le condizioni generali sulla sicurezza di seguito riportate quando si lavora con l'elettricità o con apparecchiature elettroniche.

PERICOLO:
Non lavorare mai sulle apparecchiature nè collegare o scollegare cavi di segnale durante temporali.

ATTENZIONE:

Per evitare scosse elettriche, collegare le apparecchiature alimentate elettricamente a prese elettriche correttamente collegate alla terra di sicurezza.

ATTENZIONE:

Per sicurezza, mentre si eseguono le prove della stampante, prestare attenzione che oggetti personali (quali cravatte, catenine e braccialetti) non rimangano impigliati nella testina di stampa in movimento.

Norsk

Generelle sikkerhetsforskrifter

Du bør følge disse sikkerhetsforskriftene når du arbeider med elektrisitet eller elektronisk utstyr.

FARE!
Arbeid aldri med utstyret i tordenväligr. I slike tilfeller må du verken trekke ut signalkabler eller koble noen til.

ADVARSEL:

Av sikkerhetshensyn må du bare koble utstyret til en jordet stikkontakt.

ADVARSEL:

Av sikkerhetshensyn må du passe på at slips, halskjeder og andre løse gjenstander ikke setter seg fast i skrivehodet når du kjører skrivertesten.

Português

Informaçõles de Segurança Gerais

As informações de segurança gerais que se seguem devem ser observadas sempre que trabalhar com electricidade ou com equipamento electrónico

PERIGO

Nunca trabalhe com equipamento nem ligue ou desligue cabos de sinal durante trovoadas.

CUIDADO

Para sua segurança, ligue os equipamentos alimentados por tensão eléctrica a uma tomada devidamente ligada à terra.

CUIDADO

Para sua segurança, quando executar os testes da impressora, certifique-se de que nenhum objecto pessoal como, por exemplo, uma gravata, colar ou pulseira se prende à cabeça de impressão, quando em movimento.

Español

Consideraciones Generales de Seguridad

Las siguientes consideraciones de seguridad deben observarse siempre que se trabaje con electricidad o con un equipo electrónico.

PELIGRO

No trabaje nunca con equipos ni conecte o desconecte cables de señal durante períodos de tormenta eléctrica.

PRECAUCIÓN

Para su seguridad, conecte el equipo que requiera alimentación eléctrica a una toma de alimentación debidamente cableada y conectada a tierra.

PRECAUCIÓN

Para su seguridad, cuando realice las pruebas de la impresora, asegúrese de que objetos personales, como corbatas, collares o pulseras no quedan atrapados en la cabeza de impresión móvil.

Svenska

Allmänna säkerhetsföreskrifter

När du arbetar med elektrisk utrustning:

Varning — livsfara:
Arbeta inte med utrusting eller in-/urkoppling av signalkablar vid åskväder.

Varning — risk för personskada:

Anslut utrustningen till jordat eluttag.

Varning — risk för personskada:

Se till att personliga föremål såsom slips, halsband, armband eller liknande inte fastnar i skrivhuvudet när du testar skrivaren.

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Electrostatic Discharge (ESD)

Attention: ESD damage can occur when there is a difference in charge between the part, the product, and the service person. No damage will occur if the service person, the product, and the part being installed are at the same charge level.

ESD Damage Prevention

Anytime a service action involves physical contact with logic cards, modules, back-panel pins, or other ESD-sensitive (ESDS) parts, the service person must be connected to an ESD common ground point on the product through the ESD wrist strap and cord.

The ESD ground clip can be attached to any frame ground, ground braid, green wire ground, or the round ground prong on the ac power plug. Coaxial cable or connector outside shells can also be used.

Handling Removed Cards

Logic cards removed from a product should be placed in ESD protective containers. No other object should be allowed inside the ESD container with the logic card. Attach tags or reports that must accompany the card to the outside of the container.

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